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No. 4

April, 1909

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AMERICAN BEE JOURNAL

Apiary of Mrs. Geo. B. Howe—See Page 131.

Home Apiary of Geo. B. Howe.

American Bee Journal

THE AMERICAN BEE JOURNAL

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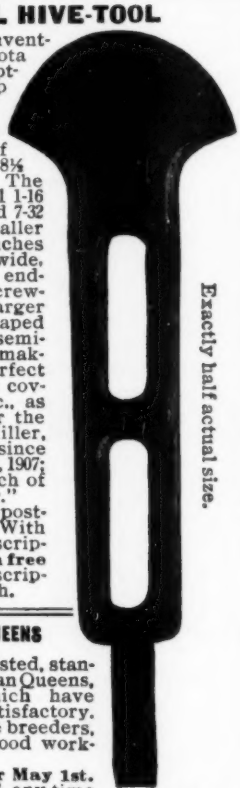

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AMERICAN BEE JOURNAL

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GEORGE W. YORK, Editor | **CHICAGO, ILL., APRIL, 1909** | **Vol. XLIX—No. 4**

Rendering Wax in an Oven

Very commonly there are more ways than one of doing a thing, and one of the ways may be bad while another good. In that excellent work, "Wax Craft," the author very properly says that extracting wax in an oven can not be recommended, because of too great heat, as the temperature should in no case exceed 172 degrees. Evidently he has in mind that the oven door will be closed, and one can readily see the great danger of going beyond 172. But there is another way of extracting in an oven that may be commended to those who have only a small quantity to render. as follows:

Take a dripping-pan with one corner split open; put it in the oven with the split corner projecting out so that the melted wax as it drips from the open corner may fall into a dish set beneath to catch it. Something must be put under the inside to raise it, so the melted wax shall flow outward. As wax melts at 143 degrees, it runs out before any danger of reaching 172 degrees, thus doing away with Mr. Cowan's objection.

For cappings and bur-combs the oven serves a good purpose, but, like the solar extractor, leaves in old combs some wax that can be got out by a press.

Our Question-Box and Its Limitation.

The many expressions of appreciation of the question-box leave no doubt as to its serving well the purpose for which it is intended. Occasionally, however, some one expresses disappointment because he has watched in vain for the clearing up of some point upon which he is in doubt. He seems to have some vague idea that the question-box is intended to give light upon all knotty points, whether any question is asked about them or not. He ought hardly to expect a question to be answered that is not asked, and he may wait a long time before some one else asks the particular question he desires answered. "If you don't see what you want, ask for it."

Every subscriber to the American Bee Journal is at liberty to make use of the question-box without any charge whatever. But there is one limitation. The question-box is not intended to take the place of a bee-book, or book of instruction, onlv to supplement it. Suppose John Smith says, "Does the old queen or the young one go with the swarm?" "How do you transfer a colony from a box-hive?" with a number of other questions equally elementary. If any of his questions are cut out, and he is told that they are answered in the bee-books, he feels aggrieved, and says, "I pay my subscription in full and am entitled to answers to any questions I may ask. I don't propose to be held up and forced to pay out extra money for a bee-book." But suppose his questions are all fully answered. A year or so later he finds the same questions are repeatedly asked by other beginners, and John Smith is likely to say: "What is the sense of having space taken up each month with questions that have been asked over and over again? I pay for my paper, and would like to get something for my money."

There are certain things that every beginner is likely to want to know—must know, if he would be successful—and a bee-book is written for the express purpose of telling him these things. If John Smith, when he first becomes a subscriber, should object to what he calls being forced into buying a book, he might be answered, "It would be hard to do you a greater favor than to get you to procure such a book, for in it you will find answered the greater number of questions that you will want to ask, and a good many others that you ought to ask but will not think of asking. Then there will be other questions that will occur to you that are not answered in the book, and such questions will always be welcomed by the question-box. It would not be a difficult task to occupy space in each number with questions that are answered in every book of instruction upon bee-keeping; but it is for your future protection against space being thus wasted that you are now urged to inform yourself on these elementary points through the study of some one of the books."

Washing Honey-Cans

Allen Latham, in Gleanings, protests vigorously against putting honey in new cans first without washing the cans, saying:

> These cans are made by men the vast majority of whom chew tobacco. These cans have all their seams wiped with a vile brush wet with a solution of zinc chloride (a poisonous salt.) They are all made from tin which, though for the most part largely handled by machinery, is frequently touched by men with grimy hands—hands befouled wth dirt distasteful to eye and taste. With all justice to these workers, does Mr. Burnett think that one of them would wash off the spot if he by chance spat tobacco juice upon the inner surface of a tin can, when that inner surface was only the side of a sheet of tin?

When a can is emptied, he thinks it should be thoroughly washed, so that no daub of honey left may injure the can. Editor Root thinks that while this may be true for climates like that of Mr. Latham, near the sea-shore, for inland localities the case may be different.

Mr. Latham says a honey-can should be entirely filled with honey, for if any air-space is present it will injure the honey if left till the next summer.

"Wax Craft"—A Unique Book

Mr. T. W. Cowan has again done a service to bee-keeping by writing a book telling "all about beeswax, its history, production, adulteration, and commercial value." The book, entitled "Wax Craft," contains 172 pages, 7 by 5 inch-

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es, with clear, open print; with 17 full-page plates, each plate having one to 4 illustrations.

The first chapter, "Historical," contains much that is novel to the average bee-keeper, and interesting as well. Perhaps every one is familiar with the use of wax in modeling, but not every one knows that at one time it played an important part in painting.

Beeswax lent its aid to magic and enchantment. When young folks tire of telling fortunes by the grounds in a tea-cup, they might return to the former use of wax. "Divination by dropping molten wax into water was in ancient times called 'ceromancy,' the various shapes assumed by the dropping of the liquid wax as it fell upon the surface of the cold water and became solid determining whether the omen was to be a happy or unhappy one."

In some countries "a lighted wax candle placed in a basket was floated on the water near to the spot where the body of a drowned person was supposed to lie, it being believed that the candle would remain stationary over the corpse."

"In Germany and other countries the shape of that portion of the body of persons affected by disease was molded in wax and placed in the church with the conviction that in this way recovery would be ensured."

As to one mooted point, Mr. Cowan says: "Wax cannot be produced at all times, but its secretion is voluntary, and for its production a temperature of from 87 degrees to 98 degrees Fahr. is required."

Mr. Cowan says sulphur fumes destroy the eggs and larvæ of the bee-moth. In this country it is pretty generally understood that sulphur fumes have little or no effect upon the eggs, bisulphide of carbon being much more effective.

Here is a paragraph taken from the chapter on wax rendering, page 56, that is packed very full of information:

> The melting of combs can be done either by the heat of the sun's rays, or with boiling water, or by steam. But only rain or river water is suitable for the purpose, and no other should be used, seeing that well water, if hard, is liable to cause wax to turn brown in color. Lime in water also unites wth the fatty acid of wax, saponifying it, so that, after cooling, wax rendered with hard water has on the under side a spongy, greyish mass. When rain or river water is not available, vinegar or a small quantity of sulphuric acid should be put into the water, just sufficient to neutralize the lime. Copper vessels are preferable, but if not available, iron ones can be used, but they should be first heated and rubbed with a piece of mutton-fat, which not only prevents the acid from attacking the iron, but the latter will not afterwards discolor the wax. It should also be noted that the nearer to the melting point at which all melting operations are performed the finer will be the product, a high temperature destroying both the color and aroma of the wax produced."

The last chapter of the book contains 110 recipes in which wax is used, followed by a very full index.

To any one who desires to make his apicultural library more nearly complete by adding to it a monograph on this practical subject, "Wax Craft" is heartily commended. It is mailed for $1.00 in this country.

Equalizing Colonies

The beginner who has been told that it is a good thing in spring to equalize colonies may do a lot of harm by it. Suppose he has a colony that has 4 frames of brood, and 2 others with one frame each. He takes 2 frames of brood from the strongest colony, and gives one of them to each of the others. Now they are equalized, each of the 3 colonies having 2 frames of brood each. The 2 weaker colonies will be benefited, but the combined benefit to the two will be overbalanced by the harm done to the stronger colony.

So long as no colony has more than 4 frames of brood, no equalizing should be done. When a colony has 5 or more frames of brood, all but 4 may be taken away. Then give a frame of the removed brood to each colony that has 3 frames of brood, letting the weaker ones wait. When there are no colonies with 3 frames of brood, then give 1 or 2 frames of brood to each colony that has frames of brood. When there are no longer any stronger ones to help, then give one, 2, or 3 frames to the weakest.

Nothing has been said about giving bees with the brood, but that is a matter of the first importance. Also there may be big mischief done if bees are not given in the right way. Give a frame of brood without any bees, to a colony having already as much brood as its bees can cover, and it means merely the loss of so much brood. Take from a strong colony 3 frames of brood with adhering bees, and give it to a weakling having only one or 2 frames of brood, and it's pretty sure guess that the queen of the weakling will be killed.

So the adhering bees must be given with the brood, and too great a proportion of strange bees must not be given at a time. If a colony has 3 frames of brood, it is safe to give another with adhering bees, without any precaution. Even with 2 frames of brood it may be safe to give an additional frame of brood. After a day or two, another frame of brood may be given without endangering the queen.

If queenless bees are given with the brood, then there is little danger of the queen being hurt, no matter how many frames of brood with adhering bees are given. In an apiary of considerable size, brood with adhering bees may be taken from all the strong colonies (of course it goes without saying that care must be taken not to take the queen with the bees), leaving at least 4 frames of brood in each strong colony, and all the brood and bees thus taken may be put in a hive on a new stand, if necessary piling up 2, 3, or more stories high. Although some bees will return to their old homes, plenty will remain to take good care of the brood. A day or more later these frames of brood and bees may be distributed wherever needed; and being queenless they will not endanger the queen, no matter if given to the weakest colonies. Besides, fewer of them will return than would if they were queenright bees.

There is, however, a way of strengthening with brood without any bees, although more troublesome. Exchange a frame of brood in a strong colony for one in a weakling, giving the weakling a frame of sealed brood for one that is mostly unsealed, and the weakling is strengthened. This suggests that in all cases of taking brood from strong colonies to help the weak, it may be well to select the ripest brood.

Getting Good Queen-Cells

Homer W. Burke gives the following plan for securing good queen-cells of best stock, in the Canadian Bee Journal:

> During a honey-flow go to a colony that has proven to be one of the best in the yard and remove a frame out of the center and replace it with a frame with only a starter in, say about 2 inches deep. Leave this starter in for 2 or 3 days until the queen has started laying nicely in it. Now remove this frame and put it in the center of a colony that is preparing to swarm, as they can generally be found at this time of year; or even better would be if you had a colony that is superseding their queen, and remove one of the center frames from it, also cutting out all queen-cells that may be started in any part of the hive. Now take this frame with the eggs in it from your best queen, being sure to trim the bottom off first, so as to have eggs in the bottom row of cells, then place in the hive. In 10 days you will have a fine row of perfect queen-cells on the bottom of this frame, as it seems to be a very convenient place for them to build.
>
> The reason I like this way of rearing my own queens is because they are from the eggs of the best queen in the yard, and naturally we improve our strain of bees. Also the bees that build those cells are not made queenless and compelled to rear a queen, and therefore they take their time in building those cells, and we are sure of having good queens.

This is the plan given in Dr. Miller's "Forty Years Among the Bees," page 239, with modifications. The average bee-keeper is likely to be frightened out of trying to get cells reared from best stock because he thinks it must be by means of artificial cell-cups. Whether he is mistaken as to the difficulties or not, he may feel assured that by this plan he will get the very best of cells, and there is nothing but what may be easily done by the veriest beginner. The modifications, however, are to be avoided rather than commended.

Mr. Burke, so far as one may judge from what he says, has his best queen in a full colony. Dr. Miller keeps his in a nucleus. One reason for this is that when a queen has thoroughly established her reputation, one desires her to live as long as possible, and keeping her in a nucleus may prolong her life a year or more. Another reason is that in a full colony, when a frame with a small starter is given, the likelihood is that the bees will build only drone-comb below the starter. In a nucleus they will build only worker-comb. If the frame be given to a full colony, it should be nearly filled with worker foundation. Even then, if a full flow is on, it may happen that the frame will be filled with honey and not an egg laid in it.

Mr. Burke gives the comb upon which cells are to be started to a colony inclined to swarm or to supersede its queen, but leaves the queen. Dr. Miller gives the comb to a queenless colony. That does not seem very much of a difference, but sometimes a very small matter makes all the difference between success and failure. When a colony becomes queenless, the bees will start one or several queen-cells, using for each of these a worker-cell containing an egg or a larva—generally a larva. Such a cell is called a post-constructed cell, to distinguish it from a pre-constructed cell, such as the bees build when preparing for swarming, the cell being

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started as a queen-cell and the egg put into it afterward.

Now the important point to note is that when a laying queen is present in a hive, any queen-cell started will be a pre-constructed one, whether intended for swarming or supersedure. That is, the cell-cup will be first built, and the egg put into it afterward. So when Mr. Burke gave a colony brood from his best queen from which to have cells started, leaving the queen in the hive in which such brood was placed, *he never got a single cell tenanted with an egg or larva of his best stock, but always from the queen present in the hive.* Whether queens so reared were good or not, depended not upon the character of his best queen, but upon the character of the queen present in the colony which started the cells.

It is true that when a freshly built comb is put in the center of a queenless colony, the bees are left at liberty to start cells on any of the other combs. But the bee-keeper is equally at liberty to reject all but the cells reared on the one comb of the best stock. The comforting fact remains, however, that very few, if any, cells will be reared on any but the one comb that is given. There are two reasons, probably, for this: The bees prefer the soft, freshly built comb; and they also prefer to build cells on the edge of a comb where there is so much room.

So if the beginner would succeed in getting queen-cells of the best stock, let him look out for two things; let him have his best queen in a nucleus—even if only temporarily—and let him remove the queen from the hive in which he desires to have the cells started. Of course, the latter queen may be returned in 10 days, or sooner if the frame of cells is put in an upper story over an excluder to be completed.

The Editor's Silver (25th) Anniversary

Yes, it was just 25 years on March 31st, that we arrived in the office of the American Bee Journal. That is a long time, and many changes have taken place during the passing years since 1884.

We had met Mr. Thos. G. Newman, the then editor, when he visited his nephew, Mr. Benj. Harding, who was our good friend at Kent, Ohio. An agreement was entered into at that time between Mr. Newman and us. We were to devote our time to the business of both Mr. Newman and his son, Alfred H., the former running the American Bee Journal and the latter the bee-supply business. In fact, we had "two bosses" for 6 or 7 years. But the experience we gained in both lines of work was invaluable in view of our subsequent business life.

In May, 1892, we bought the American Bee Journal, going into debt for about two-thirds of the purchase price. We thought we had put in pretty hard licks, but during the 6 years following, we certainly did do some hustling, in order to clear up the indebtedness. Then following those 6 years, in addition to editing and publishing the American Bee Journal, we also managed a large bee-supply and honey business, until 5 years ago last October. For several years we were perhaps the largest bottler of honey in this country. But the load we were carrying was too heavy for us physically, and so preferring to live a few years longer, we disposed of the bee-supply business in September, 1903, and since then have devoted most of our time to the American Bee Journal.

Next year—1910—will be the American Bee Journal's "Jubilee Year"—50 years since it was founded by Samuel Wagner, in Washington, D. C. After conducting it a few years he died, when it passed into the hands of Rev. W. F. Clarke and others, the former editing it for a year or two. Thos. G. Newman then purchased it (in 1873), and until May, 1892, was its busy editor and publisher.

So we have been connected with the American Bee Journal a trifle over half of its life, and have edited and published it for just about one-third of its existence.

In 1881 the Bee Journal was changed from a monthly at $2.00 a year to a weekly at the same price. In July, 1885, the price was put at $1.00 a year, and so continued till July, 1907, when it was changed back to a monthly publication. Today the price is only 75 cents a year, while it contains about twice the amount of reading matter in its regular 32-page issue that it had when it was a monthly at $2.00 a year. And there are many who think that today the American Bee Journal is a better bee-paper than ever. It has a larger number of subscribers than it has had at any time during its history. But *we* think it ought to have several times its present number of subscribers.

The years are rapidly passing. So many of the old friends of the American Bee Journal have gone to their reward, and so many others are fast approaching the time when the last farewells must be said. We have met and become acquainted with a large number of bee-keepers during the 25 years of our connection with the American Bee Journal, most of whom we feel that we can count as real friends. To possess their friendship and regard is to be rich in what is of most value in life. It were discouraging and almost hopeless if it were not for the inspiring friendships of earth—if it were not for the loyal and true spirits that one meets and holds close to his heart as the years come and go. After all, unless one is faithful, and tries to do his best, even if not financially well rewarded, there isn't much else to strive for on earth. The greatest satisfaction comes from having made a sincere effort to be helpful to others, to be loyal to the highest and the best, and to be faithful and true to those who have shared in life's struggles and conquests. The end comes all too soon to most of earth's toilers, so that it would seem that the few short years may well be spent in doing one's

1884

1909

GEORGE W. YORK,
Editor American Bee Journal.

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best to make life's pathway a little smoother and a little less irksome to those who are going the same way. When all is said, and all is done, the final verdict, "Well done, thou good and faithful servant, enter thou into the joys of thy Lord," if it can be truly said, will be reward enough for having striven to live well, even if there were nothing promised beyond that.

So at the threshold of another 25 years we will take a new grip upon the apiarian and other duties and problems that confront us, and go forward to meet them, and to perform them, with the spirit of the conqueror who, though sometimes defeated, is not cast down, and who from every contest receives a new impetus to strive to render a nobler and a better service to mankind.

A Call from Mr. E. F. Atwater

Idaho has large possibilities as a bee-keeping State. Mr. E. F. Atwater, who has about 700 colonies there, gave us a very pleasant call recently. He is one of the hustling young bee-keepers of that part of the country, and has also written occasionally for the bee-papers. He is very pleasant to meet, and, nothing preventing, he will easily find his place among the leaders who specialize in bee-keeping.

Another 48-Page Number

This number of the American Bee Journal is another one having 16 extra pages. We had such an accumulation of good reading matter that we just had to use the extra space in order to keep up with the incoming contributions. We trust that our readers will not object to the extra number of pages again. On the contrary, we feel sure they will appreciate it so much that many of them will try to get their neighbor bee-keepers to become subscribers. We wish they would do this. We always have room for more subscribers. There are just thousands upon thousands of bee-keepers who need the kind of help that the old American Bee Journal can give them.

Getting Honey While Curing Foul Brood

Some of our Western friends manage to secure good crops of honey while curing foul brood. E. F. Atwater thus tells about one case of more than a hundred colonies, in Gleanings in Bee Culture:

> Last April, in inspecting our McDonald yard of 140 colonies, we found perhaps half of them affected with foul brood. With a view to circumvent robbers while working with the bees, we at once constructed a tent to use in our work at this yard. When the flow arrived, early in June, with three helpers I went to this yard, and in about twelve hours we shook almost every colony into a clean hive, supplied with wired frames and full sheets of foundation, and clipped every queen to prevent absconding. About 25 of the weaker colonies were taken a few rods away, to the north part of the yard, all their queens caged, and the brood from the shaken colonies was piled up on them to hatch, and all entrances well contracted. When shaking, all combs with little or no brood were put in hive-bodies, and stacked up bee-tight in the shop. Then in ten days to three weeks, as we had time, we shook the stacked-up colonies at the north end of the yard.
>
> As some colonies were weak at the time of shaking, we made only 100 good colonies from the original 140. As we wished honey rather than bees from this yard, we preferred to make our increase at other yards which are free from disease. When fall came, the bees were again inspected and all found clean except seven colonies, which, as bees are cheap here, were sulphured and hauled home. The 93 colonies gave as large a crop per colony as was taken from yards not diseased.

Curing Foul Brood in the Fall

The proper time to treat foul brood is when bees are gathering. Sometimes, however, it happens that a case has been unavoidably left without treatment, and according to J. L. Byer, in the Canadian Bee Journal, Jacob Alpaugh has been quite successful with fall treatment. He says:

> Briefly stated, the infected colonies are left till October, when the brood-rearing has ceased, and then the bees are shaken on empty frames and left that way for 2 days. At the end of that time full sheets of foundation are given, feeders put on and the bees fed as rapidly as possible. Last fall a friend of mine well known to a good many members of our Association had a number of colonies slightly affected with foul brood, and he decided to try this treatment, as circumstances kept him from attending to them earlier in the season. The result was an unqualified success, and my friend said he would not have believed that it was possible for the bees to draw out the foundation as quickly as they did. Certainly the 2 days' starving did not appear to hurt the bees any, and as they appeared after treatment clustered on the beautiful new combs I would not pay 2 cents to insure their wintering.

Death of Editor W. Broughton Carr

Mr. W. Broughton Carr, for many years editor of the British Bee Journal and of the Bee-Keepers' Record in conjunction with Mr. Thos. W. Cowan, died Feb. 11, 1909, at the age of 73 years. The initials of his name are very familiar in connection with the "W. B. C." hive of his invention. He was a man greatly beloved, and his death is a serious loss to British bee-keeping.

"Forty Years Among the Bees"

F. Dundas Todd, ex-editor of the Photo Beacon, while criticising some of the illustrations in Dr. Miller's "Forty Years Among the Bees," has this good word for the book itself, in Gleanings in Bee Culture:

> Again, there is that Nestor of bee-keeping, Dr. Miller, whose "Forty Years Among the Bees" is in my hands every day from March to September, for the very simple reason it comes nearer being specific in the details I want to know than any other book on bee-keeping.
>
> I like the doctor's book just because he goes so thoroughly into the details of his practice, and in many ways I am endeavoring to follow him. He is the only writer who goes minutely into hive-construction, so far as I know, and I want to say that this past season I would have been in a pretty fix if I had not had his "Forty Years Among the Bees," as I am so far from supplies, and was compelled to make my own hives. It can, therefore, be readily understood how much I had to rely upon books.

A Book About Honey

There are books galore about how to manage bees, there are books devoted solely to queen-rearing, and books devoted to other branches of bee-keeping, to help the man who is trying to make a gain by selling honey, but here is a book about honey itself. Alas for the majority of bee-keepers in this country that it is written in the German language. Yet that will make it all the more valuable to German bee-keepers in this country who still maintain a love for the mother-tongue.

"Der Bienenhonig und seine Ersatzmittel" is written by Dr. Alfred Hasterlik, contains 232 pages, and has 3 illustrations. Beginning at the beginning, we are told how the bee gets the nectar and what it does with it, including an analysis of nectar; then through the chemistry of honey, its harvesting, testing, adulteration, etc., up to its marketing. There are also given pharmaceutical preparations in which honey is employed, and this for several different countries, and a string of recipes for honey-cakes, etc. One is just a bit surprised to find that this list of recipes is hardly so full as that contained in the booklet "Honey as a Health Food," that has had so large a circulation in this country, seeing that honey is so much used in home-cooking in Germany.

It is interesting to note how American honeys are rated. Northern white clover honey holds the first rank, with the Florida mangrove a close second; then comes Cuban bellflower, and then linden.

Much honey is imported into Germany. In the 10 years from 1897 to 1906 inclusive, more than 860 tons were imported from California. That seems like a lot of honey. Mexico, however, furnished more than 3 times as much; Cuba 11 times as much; and Chile and Peru 20 times as much.

Illinois Bee-Keepers, Beware!

We have received the following from Jas. A. Stone, a member of the Legislative Committee, of the Illinois State Bee-Keepers' Association, which will be of interest to every honorable bee-keeper of Illinois:

> When our committee came before the committee in the Illinois Senate, we were asked why some of the bee-keepers opposed the Foul Brood Bill; and, from what we were able to figure out, there are two bee-keepers making objections—one from the north part of the State, and one from south part. We are sure we are "onto" both of them. Both have foul brood among their bees, and the disease has been known to go with queens sold from one of them—if not from both. We placed the facts before the committee—showing what a pity it would be not to prevent such men from spreading the disease broadcast over the State.
>
> It now behooves bee-keepers everywhere in Illinois to see that we get a law to protect us from these men whom we cannot call honest, for no man will fear an honest law, if he himself be honest. Let all bee-keepers see their representatives and warn them against these Shylocks. JAS. A. STONE,
> Springfield, Ill. *Mem. Legislative Com.*

What a shame it is that just a few obstinate bee-keepers in a whole State should be listened to at all by any members of the legislature of Illinois in a matter that practically all of the bee-keepers are in favor of, and know they ought to have! Especially is this true, when the States surrounding Illinois are securing good bee-disease laws. See what Indiana, on the East, has done recently; and Wisconsin, on the North, has had a good bee-disease law for years. Shall Illinois continue to remain in the rear in this matter, just because two or three of her bee-keepers do not agree with all the rest of the State? It is high time that this much-

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needed law is enacted, for it is for the protection of all honest and sensible bee-keepers, from those who would harbor in their own apiaries, or spread broadcast, bee-diseases, which, if not cured or restrained, would soon wipe out the whole bee-business of the State.

Let all bee-keepers in Illinois come to the defense of the bee and honey business and urge their members of the legislature to *vote for* the bee-disease Bill. Don't delay in this matter, but act *at once*.

To New Jersey Bee-Keepers

We have received the following letter from Albert G. Hann, Secretary of the New Jersey State Bee-Keepers' Association, who wishes again to ask the co-operation of all New Jersey bee-keepers in the effort now being made to secure the bee-disease law:

Our foul brood Bill has been introduced into the Senate by Senator Gebhardt, of Hunterdon County, and is now in the hands of the Committee on Agriculture, of which Senator George W. F. Gaunt is chairman. It is now up to the bee-keepers of the State to make their needs known to their law-makers. Let each interested bee-keeper write at once to the assemblymen and senator from his county, urging them to support this Bill. Also write to Senator Gaunt, asking him and other members of the Committee to get the Bill before the Senate.

All legislators may be addressed at the State House, Trenton, N. J.

What we do must be done *now*, for the legislature will adjourn before many weeks.

ALBERT J. HANN.

Pittstown, N. J., March 28.

Morley Pettit, Ontario's Provincial Apiarist

Upon the recommendation of the Honorable, the Minister of Agriculture, the Committee of Council advise that Morley Pettit of Aylmer, Ontario, be appointed Provincial Apiarist, his duties to include:

1. The conduct of experiments in Apiculture at the fruit Experiment Station, Jordan Harbor, Ont.

2. The Inspection of Apiaries under the Foul Brood Act; and

3. Lecture work at the Ontario Agriculture College—said appointment to take effect on and from the first day of April, 1909.

This may be a surprise to many, in view of the fact that Mr. Pettit yielded to the call to preach the gospel a couple of years ago. But he left the regular ministry more than six months ago for reasons that were considered good and sufficient to himself, and while wondering what he would do next, the offer of the position of Provincial Apiarist for Ontario came to him quite unsolicited. The wide opportunities it will give for a practical demonstration of Christianity in everyday business and professional life appealed strongly to Mr. Pettit. It really seemed to him that it was a direct answer to prayer.

The field of practical experiments in apiculture has been very little touched upon under Government auspices in Canada, although great progress has been made by private enterprise and at private expense. If all the money that has been lost could be reclaimed, it would equip several experimental stations and employ a whole corps of experimenters.

Both the Ontario government and bee-keepers are to be congratulated that they are to have one so competent in so many ways to labor with the bees themselves, in order that theories concerning them, and their habits may be demonstrated, and better ways and methods discovered for the more successful management of the apiary. It is hoped that Mr. Pettit may have the fullest support and co-operation of all the bee-keepers in Ontario, so that his labors may result in the highest good to the largest number of those in whose interest he will now devote his time and abilities. Having a very pleasant personal acquaintance with Mr. Pettit, and also with his father, Mr. S. T. Pettit (who is also one of the oldest leading bee-keepers of Ontario), we bespeak for the new Provincial Apiarist a large measure of success in the field of apiarian experimentation.

HONEY EXHIBIT AT JEFFERSON COUNTY (N. Y.) FAIR.

To Iowa Bee-Keepers

We have been requested to republish the item on page 88 of the March American Bee Journal, relative to securing a bee-disease law for the State of Iowa. It was there urged that every bee-keeper in Iowa write to his members of the legislature to be sure to do all they can for the passage of the law in their interest. We think it hardly necessary to publish what appeared on this matter in last month's number, as it should be sufficient simply to call the attention of the Iowa bee-keepers to the subject again. They will certainly act promptly and effectively, and thus help in securing the enactment of their much-needed law against bee-diseases, and for the inspection of apiaries.

Italian Queen-Breeder in Earthquake

A noted Italian apiarist, Signor Vincenzo Asprea, is a breeder of Italian Queens for export, and translator into the Italian language of several foreign studies on bees, among others the Bulletin No. 55 of the Bureau of Entomology "The Rearing of Queen-Bees," by Dr. E. F. Phillips. Mr. Asprea lives at Gallina, in the close vicinity of Reggio, the unfortunate Calabrian city destroyed by the earthquake in December last.

L'Apicoltore, published in Milan, in its February number says:

"We have received many postal cards from bee-keepers who enquire about Mr. Asprea with words of sympathy. We have transmitted these to our friend, who replied thus on January 14: 'I have received your letter, and thank you and all our good friends for the interest you take in me. We are living a sad life, desolate among the ruins; we are badly sheltered in huts built hurriedly with our own hands under the menace of cold and rain. It rains, it rains with a steadiness unknown in these parts. And our poor dead still remain buried under the stone-heaps of Reggio, from which we have not been permitted to dig them out, neither do the soldiers succeed in doing it. They lie pell-mell with other dead, as the walls and timbers that crushed them buried them, and are decaying there.'"

Apiaries of Mr. and Mrs. Howe, Etc.

I am sending some photographs. No. 1 is the apiary of Mrs. Geo. B. Howe, in 1908, of which she is justly proud. This little apiary produced honey enough to pay for itself at $6 per colony last spring, and some besides. I call this good for a dry year. Our bees averaged about half a crop or less.

No. 2 shows our home apiary of 266 colonies of 3-banded leather-colored Italians, in 1908. I have bred this strain for 12 years, and have a strain that cap their honey white. I would be glad to pay a good price for a breeding-queen that will produce better honey-gatherers and cap their honey white.

I think if the bee-keepers would take more pains to breed better bees there would not be any need of all this shaking that some advocate. I do not see why any one can not do as well as I have done. I got the best honey-gatherers I could get, and bred them, not for beauty, but for *honey*. I find after

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years of careful breeding that there is a steady gain, and I test the best strains I can get beside my own. Do not think that because you have a good breeding-queen that is all you need, for you need just as *well-bred drones* as queens. I am more than convinced that you must have them in order to get the best results. I do want a pure queen for a breeder. I know that there are some that claim that a hybrid is just as good, but I claim that more lasting results are secured with a pure queen, and the young queens are much more even as to honey-gatherers. I hope that the bee-keepers will wake up to what they are losing.

There is not a bee-keeper who can not improve his bees, and get more honey, by careful selecting and breeding. I have done it, and others can. Do not keep a poor queen if you know it. Get her out of the yard as quickly as you can.

No. 3 is D. R. Hardy's apiary, in 1907. He is a firm believer in well-bred bees, and is a breeder of the Carniolian crosses, is a successful bee-keeper, and is well known at our bee-conventions.

No. 4 shows a honey exhibit at the Jefferson county fair, Watertown, N. Y., put up by Messrs. Hardy, French, Simmons, and Howe.

How I do miss the American Bee-Keeper! The February number of the American Bee Journal is a hummer.

GEO. B. HOWE.

Jefferson Co., N. Y.

APIARY OF D. R. HARDY, JEFFERSON CO., N. Y.

Indiana Bee-Disease Law

Last month we mentioned the passage of a law in Indiana in the interest of bee-keepers. Not only for the benefit of the bee-keepers of that State, but that other States not having such needed law, may see what Indiana has enacted, we publish the sections of interest to bee-keepers, as follows:

HOUSE BILL NO. 144.

A Bill for an Act to amend sections 8, 9, and 10, of an act entitled, "An act to provide for the appointment of a state entomologist, defining his powers, prescribing his duties, fixing his compensation, providing for the inspection of nurseries, and to prevent the dissemination of the San Jose scale and other dangerously injurious insects and plant diseases, defining the penalties for the violation of this act, making an appropriation therefor, repealing all laws in conflict therewith, and declaring an emergency," approved March 9, 1907, and also adding sections thereto to provide that the state entomologist shall be State inspector of apiaries, prescribing his duties and fixing his compensation as such inspector; providing for the appointment of deputies and assistants to the state entomologist and limiting their salaries; providing for the filing of affidavits by parties affected by the inspection clauses of this law, and declaring an emergency.

SEC. 4.—The state entomologist shall be and is hereby constituted State inspector of apiaries and as such inspector it shall be his duty to aid and assist in the development and protection of the bee and honey industry in this State, and to adopt and carry out proper measures for the prevention and suppression of contagious and infectious diseases among bees.

SEC. 5.—The state entomologist shall have full power and authority at his discretion to visit and examine any apiaries for the purpose of discovering whether or not any disease may exist among bees in any part of the State. When notified of the existence or the probable existence of foul brood or other contagious or infectious diseases among bees in any apiary in the State, he shall visit and examine said apiary so reported and all other apiaries in the same neighborhood that he may be informed about by diligent inquiry or otherwise, for the purpose of determining whether such disease exisits or not. Whenever he shall be satisfied of the existence of foul brood or other diseases in their malignant form in any apiary it shall be his duty to order all colonies so affected, together with all hives occupied by them, and the contents of those hives and all tainted appurtenances that cannot be disinfected and that might cause the further spread of the disease, to be immediately destroyed by fire under his personal supervision and care, but where said entomologist, who shall be the sole judge thereof, shall be satisfied that the disease exists in incipient stages, and is being or may be treated successfully, and he shall have reason to believe that it may be entirely cured, then he may in his discretion omit to destroy or order the destruction of the colonies or hives in which the disease exists.

Whenever the disease shall be found to exist and the treatment for the same shall be ordered by the State entomologist, he shall give to the owner or person in charge of the apiary instructions as to the manner of treatment of such apiary, and to see that such treatment be carried out, and should the said owner or person in charge of said apiary refuse or fail to carry out the said instructions to the complete eradication of the disease, or the satisfaction of the State entomologist, he shall destroy or order to be destroyed all said diseased colonies by fire as provided for in case of disease in its malignant form.

SEC. 6.—The State entomologist shall have full power in his discretion to order any owner, possessor, or person having charge of bees dwelling in box-hives (having mere boxes without frames), in apiaries where disease exists, to transfer such bees to movable-frame hives, within a specified time, and in default of such transfer he shall order destroyed or destroy all such box-hives and the bees dwelling therein.

SEC. 7.—The said State entomologist shall have the right to enter for the performance of his duties upon any premises where bees are kept.

SEC. 8.—The State entomologist shall include in his annual report to the governor such information in regard to the work of the apiary inspector and bee-culture as he may deem of importance to the State.

SEC. 9.—Any owner of any apiary where disease exists or any person or persons, company or corporation who shall sell, barter or give away, or import into this State any colonies or colony of bees or appliances infected with disease, or expose to the danger of other bees any comb, honey, bee-hives or appliances or things infected with the disease, or conceal the fact that disease exists among his or their bees when disease is known to exist, or refuses to allow the State entomologist to inspect or treat any apiary or appiances, or shall resist, hinder or impede him in any way in the discharge of his duties under the provisions of this act, shall be guilty of a misdemeanor and upon conviction shall be fined in any sum not less than ten dollars ($10) nor more than twenty-five dollars ($25).

SEC. 10.—Every bee-keeper or other person who is aware of the existence of foul brood or other infectious or contagious diseases either in his own apiary or elsewhere, shall immediately notify the State entomologist of the existence of such disease, and in default of so doing shall be guilty of a misdemeanor, and upon conviction shall be fined in any sum not more than ten dollars ($10).

SEC. 11.—Apiaries within the meaning of this act shall be any place where one or more hives, swarms, or colonies of bees shall be kept.

SEC. 12.—Whenever as the result of an official inspection the State entomologist or any of his deputies shall order the treatment or removal of any trees, vines, shrubs or plants, or shall order the treatment or destruction of any bees, have, frames or other appurtenances connected with apiculture he may require that an affidavit shall be filed by the owner or person in charge of the property so affected in which it shall be stated that the treatment ordered has been carried out to the best of the affiant's ability, and that the work had been effective for the purpose prescribed. Any person making such affidavit, knowing the same to be false, shall be guilty of perjury.

SEC. 13.—The State entomologist shall have the authority to employ such deputies and assistants as the work of the office may require. They shall hold office for such periods of time as the work of the office may require and in their appointment the State entomologist shall consider only their fitness for the work which they will undertake, disregarding entirely all political affiliations. The salary of no deputy shall exceed twelve hundred dollars ($1200) per annum. The inspector of apiaries shall receive for his services the sum of one thousand dollars $1000) per annum in addition to his salary as State entomologist. Such compensation to be paid out of the general appropriation for this act.

SEC. 14.—Whereas an emergency exists for the immediate taking effect of this act it shall be in full force and effect from and after its passage.

We think that Indiana bee-keepers are to be congratulated.

Mr. Walter S. Pouder, of Indianapolis, who did valiant service in securing the passage of the foregoing law on March 5, 1909, wrote thus on March 6:

"In my opinion we have the very best bee-law in the Union. The office of our Entomologist will be a permanent headquarters. Some may think that the method of disposing of diseased bees could be improved, but we expect to have an inspector who will use good judgment in this part of the work."

Honey - Sweetened Tea for the Memory.

"For a bad memory," says The Federal Independent Bee-Keeper, "drink sage tea, sweetened with honey." Now what can we drink "sweetened with honey" to make us *forget* disagreeable things?

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Conducted by EMMA M. WILSON, Marengo, Ill.

How to Clean T-Tins.

I am asked how to clean T-tins. I am glad to be able to tell of an easy and successful way to clean them without scraping, for I know what it means to scrape them.

A large iron kettle, such as is used in butchering hogs, is a very good vessel for the purpose, for it can be used in the open air and all the muss taken outdoors. Fill the kettle a little more than half full of water (the amount will depend upon the number of T-tins to be cleaned); build a good fire under it, and when the water is boiling hot add 2 or 3 cans of concentrated lye, pouring in very carefully and slowly, because the lye is likely to boil over.

Now put in as many T-tins as the kettle will hold without being too much crowded, for there must be room enough to move the T-tins about freely, so the lye will reach all parts. This can be done nicely with a four-tined pitchfork. Slowly lift the tins up and down with the fork, so the lye can get at all parts, and the loosened propolis will be washed off by the same movement.

If the lye is strong enough a very few minutes will be sufficient to clean them thoroughly. Now lift them out with the fork into a tub of clear rinsing water, souse them up and down a few times, and lift out, setting them up on end in a crate or box to drain.

The amount of water and lye used must be governed by the number of tins cleaned. Whenever the solution acts too slowly, add more of the concentrated lye, and water must be added, too, when needed. See that the water is kept hot all the time.

I am sure you will be pleased with this way of cleaning, as it is very simple, and the T-tins look like new after their bath.

Wearing Bee-Gloves—Mud for Removing Propolis from Fingers.

That always interesting Scotchman, D. M. Macdonald, says in the British Bee Journal, that he never wore bee-gloves, and never will, but will look on their use with more tolerance after reading in this department that the sisters care more for gloves as a protection against propolis than as a protection against stings. He then says:

"By the way, I find the best effacer of this tenacious adherent is *mud*. A fair flow of water, falling some two feet, is available. If the hands are 'soaped' by the rough mud and cleansed under this flow it clears the propolis off expeditiously, and generally most effectively."

That's new. Wonder if he uses any particular brand of Scotch mud, or whether common American mud would do.

Referring, again, Bro. Macdonald, to your statement, "I never wore them when manipulating bees, and never will," please don't be too sure. Not a thousand miles from here there was once upon a time a certain bee-keeper who scouted the idea of wearing bee-gloves. But when his bees became cross enough he was glad to don those same despised gloves. Are you sure that you will never have cross enough bees?

Good Bee-Country.

I live very near Swine Creek, in Geauga Co., on the banks of which grow sweet clover, spearmint, peppermint, heartsease, purple aster, milkweed, boneset, and goldenrod. Fields of alsike clover are growing near, and the seeds have scattered over the pasture. White clover grows wild here. Would you call this a good bee-country? OHIO BEE-WOMAN.

Yes; especially if alsike and white clover are abundant.

A Preacher's Mellifluous Words.

In Bishop W. A. Quayle's book, "The Prairie and The Sea," page 127, occurs the following passage which is as sensible as it is beautiful:

"And the bee-weed, swarming with bees, tosses its pink blooms; and the sweet clover, with its perfect musk of perfume, so sweet that it is no wonder, as I walk along-side it, the hum of bees is as if a hive were there instead of a flower. Can that be set down as a weed and a nuisance which gives daily bread for the bees and honey for hot biscuits on wintry mornings? These are solemn thoughts, as we ministers say. And alfalfa has strayed out of the field where it has been fenced in, and its smell is sweet, and its bloom is purple as king's robes; and I forget it is grown for hay, and think it is grown for perfume and poesy. God is so given to blending utility with æsthetics. He loves to."

The Good Work of Two Bee-Sisters.

Louisa C. Kennedy gives the following interesting account of the work of herself and sister, in Gleanings in Bee Culture:

After our father was taken from us, 16 years ago, my sister and I carried on the apiary. That was the spring when everybody lost nearly all his bees. We lost all but 18 queens with a mere handful of bees for each—perhaps not more than a pint of bees to the queen. We fed and built them up and then divided them until we had 35 good colonies. That would have been a pretty good honey-year if we had only had the bees to gather it. As it was, we sold about $102 worth of honey. Since then we have had some pretty good honey-years, and a good many very poor ones. The poorest year we sold only $31 worth of honey; the best, $578 worth.

The greatest number of colonies we ever had at any one time was 93; the fewest, 18. During the 16 years we have received for honey sold, $3,496.99. During this time our expense for the apiary has been $576.66. Upon the whole I think that is not so bad for two women, pretty well along in years, to do. During the last few years we have had our brothers to help us with the heaviest of the work, such as taking off honey (we have always worked for comb honey), fixing up the bees for the winter, etc.

This present year the forepart of the season was so wet and cold the bees could not work. When it did become dry and warm they tried to make up for lost time. We got about 3000 sections of honey and about 600 more this fall. We had 60 colonies, spring count, and we now have 72 good strong ones in winter quarters.

Honey and Water-Cress Juice for Removing Freckles.

Take water cresses, wash well and let drain, mince fine and press. Weigh the juice obtained, and mix with 1-3 of its weight of honey, and filter. Each morning and evening wash the freckles with this solution.—L'Apiculteur.

"Wide-Awake" Sisters?—Sure!

G. M. Doolittle, page 98, says of the wide-awake bee-keeper, that "he or she will begin looking about to see if everything is in readiness for the summer campaign." Thanks, Bro. Doolittle, for that "or she," thereby recognizing that there are sisters in the craft and especially for classing them among the "wide-awakes."

Appreciates His Wife.

Mr. C. N. White says in the Irish Bee Journal:

"My successes, such as they are, I attribute in great measure to my wife, and I often wish that more men were blest as I am in this respect."

Mr. White's case is probably not so exceptional as he thinks. Not a few bee-keepers are glad to give their wives full credit, and others are just as much indebted without saying anything about it. Not that they are ungrateful, but it doesn't come in handy for them to mention it.

Honey Egg-Nog—It's Good.

Here are directions for a delicious egg-nog, with a rich, nutty flavor, made without brandy from an original recipe by the writer:

Take the yolk of one egg, beat well. Add slowly one level teaspoonful of sugar. Continue beating until the yolk is a light, thick froth. Then add a level teaspoonful of bees' honey, dropping it in while beating. Beat the white of an egg to a firm froth. *Pour the beaten yolk into the white*, gently folding it in. This will make a tumblerful.

Egg-nog made in this way is doubly nourishing—the honey having much the same nouirshing quality that olive-oil has. At the same time it is most palatable to one of weak digestion, and acceptable to all of strong temperance principles. I think any one who tries it once will wish to try it again and again.—A. V. F., Tenn., in The Delineator.

We have tried this and it is good.

A Sister's Good Success—Bee-Postal Cards Help Sell Honey.

DEAR MISS WILSON:—I thought I would have a short chat with you. I had good success with my bees last summer. It was a great swarming year, but I did not lose a swarm. I have sold over 1,000 pounds of honey, and have 1,000 pounds yet to sell. I am selling at from 11 to 12½ cents per pound. I have 51 colonies of bees put into the cellar. I think the bees would have

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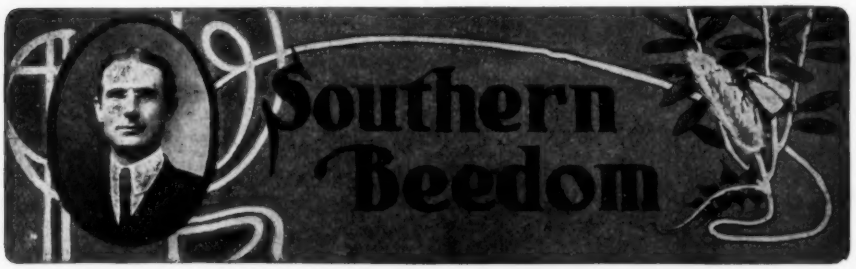
gathered 3,000 pounds had it not been for a dry spell we had after harvest.

I think the humorous bee post-cards offered by the American Bee Journal are a good thing. Sending them to honey customers has helped the sale of many a pound of honey.

CATHERINE WAINWRIGHT.

Tilton, Iowa, Feb. 11.

Sorry you did not mention how many colonies you began the season with. As it was a very swarmy season, and you ended with 51 colonies, the probabilities are that 2000 pounds was a big yield for the number you started with. Let us hope that you may make as good a report in 1909.



Conducted by LOUIS H. SCHOLL, New Braunfels, Tex.

The Honey Prospects in Texas.

We are anticipating a banner honey-year this year. From reports and places visited, the majority of the bee-keepers are "figuring" on a crop, as the prospects are quite good. It is true some localities are needing rain badly, while others (our own included) have had recent rains. Since we had rain during last fall and in the winter, we may expect a crop of mesquite honey as a certainty, no matter how dry it remains even after it has bloomed. "The dryer the better for it providing we have had a good fall and winter season," is an old saying with the bee-keepers here. Just so it does not rain during the blooming period, for the mesquite blossoms are very delicate, and rains wash them all to pieces. Early rains before this time are beneficial, however, as they help other vegetation, and cause the bees to be in much better shape for the mesquite flow when it comes.

I have figured this way for years: If it is too dry for anything else, and we have had much winter rain, so that it is too wet for mesquite honey, we bend all of our energies toward a crop from the cotton fields, which, in that case, would be of rank growing cotton-plants that yield honey abundantly. We had just such a year in 1908, getting very little mesquite honey, but much of the latter. Since I, myself, have not seen an entire failure in Texas, I can not believe that such could take place. The great "Lone Star" State's locations vary so much, and there are so many, that some honey will be gotten somewhere.

Mulberry Shade for Bees.

Where natural shade can not be obtained I would prefer to plant some rapid-growing, shade-producing tree than to go to the expense and trouble of making and continuously handling shade-boards. There are a number of different kinds of such shrubs or trees that would answer the purpose nicely. I would not select an evergreen, however, as I have found, after planting an apiary with such, that it is undesirable. My preference is for a deciduous tree—one that sheds its foliage in the late fall—so that the sun can warm up the hives in the early morning and other parts of the day.

While visiting an apiary I found that a common wild mulberry, growing here in many places, was used for this purpose. I was so well pleased with it that I obtained a picture showing one of these without the leaves in early spring, and with its foliage in the summer. There is also a view of part of the apiary of such trees. In the midst of our hot summers it is a pleasure to work in such a yard, and these are permanent shades. With shade boards one must work right in the hot sun, handle them every time a hive is to be opened,

MULBERRY SHADE-TREES.

and these have to be repaired frequently, making them an extra expense.

Speaking of shade-boards, I have seen hundreds of different kinds. Some were very frail, and more inexpensive, while I saw some made out of 2 x 12 inch lumber cleatd together, making them weigh about 75 pounds each. Such are a nuisance, if the lighter ones are not.

Some Texas Notes and Comments.

Sorry, Editor York, that old "Grippe" has had you (page 38, February issue), but if that's the cause of the *extra-good* number of the "Old Reliable" gotten out for February—I well, I don't wish you would have the "grippe" again, but, but, I'd be willing to wait a little longer each issue.

THAT REMARKABLE OVERFLOW.

That flooded apiary of T. P. Robinson, of Bartlett, Tex., described on page 66, was indeed remarkable, as he says very little loss occurred of bees, brood, etc. I should have expected fully one-half of the flooded colonies to have swarmed out if they were not promptly looked after, their combs dried, etc. That has been my experience with flooded bees. Perhaps, as he stated, it was owing to the short time the hives were in the water.

PROSPECTS AT THIS TIME.

Extremely dry weather is reported now almost all over Texas, and it is becoming serious. It is now planting time with the farmers, but no moisture to bring up farm and garden seed in many places. What effect this will have on the future honey crop of the State, we can't say. It is said, however, that dry years are the best for honey in some localities here. Let us hope if the drouth continues this will prove the rule rather than the exception in all localities.

BEES GENERALLY IN GOOD CONDITION.

Bees have come through the winter in extra-good condition all over the State, so far as heard from. They are strong in bees and well supplied with honey, and if we have our usual honey-flows there should be another large honey crop for Texas. But who can tell what the future has in store for us? I am forced to admit that prospects are anything but bright for the apiarist, owing to the drouth, which seems to be general over the State.

PURE BLACK BEES DISAPPEARING, ETC.

Out of 40 bee-trees myself and one of my sons have found and cut the past fall and winter, not one contained pure black bees. They were all hybrids that showed more or less yellow bands. A few colonies showed all the markings of pure Italians, but, in reality, they were hybrids, too, as their disposition clearly showed.

My object in writing this is to show that the true black bees of 40 years ago are fast becoming a thing of the past. Black bees may be the best for some localities and for some few people. I think very few, however, here in the South, would prefer blacks to Italians after having tried both. It is true, we have some hybrids that are the equal of any bees on earth when it comes to honey-gathering, but I am sure that the improvement in these hybrids comes from the Italians.

HOW FAR DO BEES TRAVEL?

Here are some of the things I should like to see discussed in the American Bee Journal by some one who knows.

American Bee Journal

First, How far will bees fly for water if forced to do so? That is, if bees were placed in a locality where there was no water within 4 or 5 miles, would they go to water that distance? As a starter, I will say the greatest distance I have ever found bees from their watering place was 2 miles, and but a few trees that distance, and I have found several hundred bee-trees in my life. But that by no means proves that they would not go further.

Second, How far will absconding swarms travel to hunt a future home? I have good evidence to show they will go 20 to 25 miles from their starting place, but how many times they "camped" on the way, "I don't know."

L. B. SMITH.

Rescue, Tex., Feb. 27.

Conducted by J. L. BYER, Mount Joy, Ont.

Condition of the Clover.

Much has been said about the killing of the clover in some sections, but I am glad to be able to say that it is in good shape so far in our section. Just today I heard that it was badly damaged in some of the lake counties, but I trust the injury will not be as extensive as anticipated.

Ontario's New Apicultural Station.

Mention was made a short time ago about the intention of the Ontario Government establishing an Apicultural station at Jordan, Ont. While the writer is aware of the appointment having been made, of a competent apiarist to have charge, yet the announcement has not been officially made as yet, so I will refrain from making any definite statement till the next issue of the American Bee Journal. At the same time I expect to be able to give the Department's program for the inspection work for 1909. (See department of "Miscellaneous News Items."—G. W.Y.)

Condition of Cellar-Wintered Bees.

R. F. Holtermann, in Gleanings for March 15th, has an article in which he states that the present season has been very bad for cellar-wintered bees. He says, "During my 26 years of experience in bee-keeping there has never been such danger for the bees wintered in the cellar as there is this winter." Then follows a well written article, setting forth the advantages of abundance of fresh air for bees in the cellar, especially so at times when the temperature goes up to 50 degrees or over. Mr. Holtermann has an ideal cellar, but I suspect there is a great difference in wintering 500 colonies in one place, as compared with say 100 or more in another cellar. Anyway, all the cellars around here are of the ordinary kind under the dwellings, with no arrangement for ventilation, and while I have been in some of these cellars during the past few weeks, the bees in every case are simply in perfect condition. With the one exception mentioned last month, this is the trend of all reports received up to date.

Only a few days ago, the writer was in the cellar of J. F. Davison, and although the bees are in the same place where all the vegetables, etc., are kept, necessitating frequent—in fact, daily—visits to the cellar; yet I never saw bees so quiet at this late time of the season. We walked among them with a light, looked up in the clusters of most of them, and probably stayed in the cellar for 10 minutes or more. Yet this cellar has absolutely no way of getting ventilation, except through a window which is opened at nights during warm weather.

Mr. Sibbald reports the best wintering in his cellar that he has ever experienced, and he was telling me a few days ago that on visiting the cellar he found so few dead bees on the floor that it was possible to walk carefully and not step on any; this in spite of the fact of there being 160 colonies in the cellar, and no dead bees having been swept up before his visit. This cellar, I understand, has no *system* of ventilation either; and while I do not say but that abundance of fresh air is helpful under certain conditions, yet I do think that the nature of the stores is a more important factor than the matter of ventilation. My limited experience in cellar-wintering of bees, coupled with a more extensive observation of bees wintering in other people's cellars, convinces me most emphatically on this matter.

I might say that in the two cases just illustrated, the bees are almost entirely on sugar syrup, and bees thus provided for, will winter in almost any old place, while others show signs of dysentary early in February even if they are in the most approved cellar.

The Bees Wintered Outdoors.

As to the bees wintering outside, from reports to hand, I would judge they, too, are coming through in fine shape. Our bees here have not had a good cleansing flight for 4 months, although today (March 23) nearly all colonies flew a little. The day was bad, however, and I would have been better pleased if they had not come out at all, as a cold wind was blowing from the north, and many bees dropped in the water which is around the yards in some places this spring a bit too plentiful to suit me. We have had more trouble from water in the yards this season than I ever experienced before, owing to the peculiar weather conditions; but little snow on the ground, the frost has penetrated quite deep, and as the snow in the fence corners and other places melts, the resultant water spreads all over and has this spring come around hives that have been in the same place for years, and were never before bothered. Straw was scattered around as much as possible, but surrounding areas could not be reached and many bees were lost. Bees will rise from snow, but if they fall in icy water they are down and out.

Referring again to how our bees are wintering outside, I am glad to say that although they have not had a cleansing flight, yet they seem to be in first-class condition; and as far as I know there is not a colony dead in the lot. Of course, there is lots of time for losses yet, but it is encouraging to know that they are in good shape so far, as, when that is the case, the chances are fair that they will be in the same condition in 2 months from now.

Editor Root is very much in favor of a sealed cover over bees wintering outside, but I, for one, cannot agree with him on this question, in at least so far as our cold climate is concerned. He says that with a sealed cover the moisture condenses on the sides of the hives and then runs out at the entrances. It will run out until it *freezes*, as it is sure to do in a real cold snap, as we are liable to get here in our section. Even if the entrances do not freeze shut, the sides of the hives will get coated with ice, and that is a condition not to be desired.

In answer to a correspondent, Mr. Root says, "It is almost impossible to keep these absorbents from becoming very damp, and freezing in winter."

During our coldest snap this past winter, having just read a like expression of Mr. Root's, for curiosity's sake I went and looked at the packing of the hives in two of the yards. In one of the yards the packing consisted of about 12 inches of wheat chaff over each hive, the hives being of the double-walled type. The covers are of the gable pattern, and over the chaff there would be a space of about 10 inches deep. Over the chaff was loosely placed an inch board, and examination showed the under side of the board in every case to be frosty all right, but the dampness in no case extended over an inch or two in depth in the chaff, and in all cases everything was perfectly dry and cosy next to the bees. Without a space for the air to circulate over the packing, the absorbent material *will* get damp, but, as can be readily seen, this condition is readily avoided.

A few years ago, during an excessively cold winter, nearly all the bees around here that were wintered with sealed covers, perished, while those with

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absorbents came through in good shape. Mr. Hoshal, one of our best bee-keepers, in that winter, experimented with some colonies by having a hole put through the boards that he always left next to the bees, as he had generally practised the sealed-cover plan for wintering. Well, that winter, nearly all his bees with the sealed covers died, while all those with the "safety valve" in the top, came through in good shape. Many have had a like experience, and for my part I know that the absorbent system is all right, but I cannot say that for the sealed covers. At the same time, I believe that some very successful Ontario bee-keepers are using the latter system with success, but, for me, I want none of it, as my experience with the sealed covers was a costly one.

I forgot to say that in the other yard I looked at during the cold spell referred to, the bees there all had a cushion of sawdust over the frames to the depth of about 4 inches. In this case, too, there was no dampness next to the bees at all, but, as in the other case, there was lots of room for air circulation over the packing.

Where bees have a flight every 2 weeks or 10 days, as is the case in Editor Root's locality, the sealed covers may be the best, but where there is pretty steady cold weather for 4 months or more, with no days suitable for a flight, it is an entirely different proposition.

By W. A. PRYAL, Alden Station, Oakland, Calif.

Objects to Sweet Clover.

I notice that a correspondent of Wallaces' Farmer comes out strongly against planting sweet clover. He admits it makes good honey, but it has no other value. "My advice," write this Iowa farmer, "to any one who is thinking of sowing sweet clover is, don't do it, for I have had experience with sweet clover." We Californians wish we could have more of this clover, but it is a pretty safe proposition that we will not, owing to the dryness of our summers.

Stachys Bullata.

Here is a plant that seems to have been despised by everybody, including even the apiarist. I presume this has been owing to the fact that it is a retiring or modest sort of member of the vegetable kingdom, for we do not find it growing in places where it can rub up with and get acquainted with every person who goes a-tumbling over the face of the earth. We find it hid away in hedgerows, and along the banks of creeks, and other out-of-the-way places. While sometimes it creeps a little out of retirement and encroaches upon cultivated spots, still, it never becomes a noxious weed.

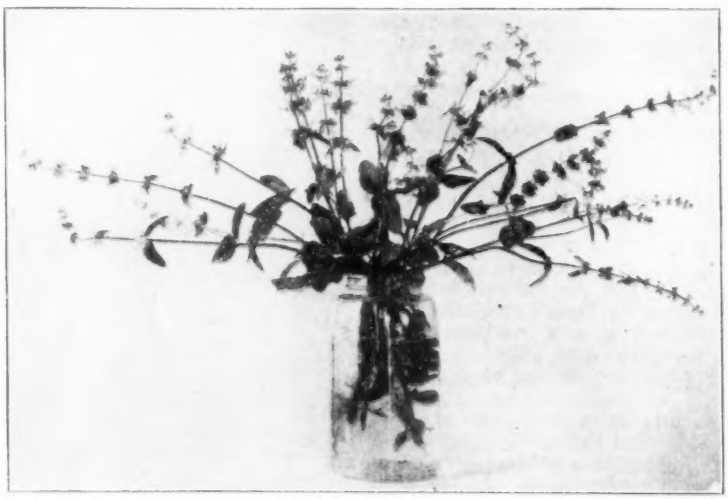
If it were not for the fact that it is one of our important honey-plants, I should not be noticing it here. It is a perennial, coming up from the roots very early in January each year, and begins to blossom in early spring, and sometimes so continues the year through. It is of rather low-growing form, and to the casual observer looks much like the black sage; the flowers, however, are usually red-purple. It is rich in nectar and furnishes considerable forage for bees. Owing to its long period of infloresence it is no mean adjunct to our bee-pasturage.

There are several varieties, but *S. Bullata* is the most common; it is found everywhere in the State. Its common name is "Hedge Nettle;" it is not a nettle, though, withal its stems, spikes and leaves are covered with nettle-like hairs.

Covers for the Brood Chamber.

Many bee-keepers in this State like to cover the top of the frames with some sort of material or fabric. For many years burlap was used; common grain sacks being handiest and cheapest. Withal the bees gnawed and soon destroyed this material, it was much used. Another objection to its use was the fact that it seemed to absorb moisture more readily than any other material. This I think a mistake. When whole sacks were used a goodly portion of them hung over the sides of the hives and they easily became soaked with rain, and by natural causes the moisture penetrated to the interior above the frames. Where wide covers that extended an inch or so all about the body of the hive were used, this trouble was not noticed, unless the cover leaked. I had used such sacking on some of my colonies, but of late years I use a heavy duck or canvas.

One may secure discarded canvas bags that contained cement at a trifling cost. One of them will make two covers. The more cement that has worked into the texture of the cloth the better, as the bees won't gnaw the cement after it has become once wet.



STACHYS BULLATA.

Apiarian Pictures

We would be glad to have those who can do so, send us pictures of bee-yards, or of anything else that would be of interest along the bee-keeping line.

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Send Questions either to the office of the American Bee Journal or to
DR. C. C. MILLER, Marengo, Ill.
Dr. Miller does *not* answer Questions by mail.

Relationships of Bees — In-breeding.

1. What relation are the drones to the worker-bees of the same queen?
2. What personal relation is the drone in the hive?
3. What do you call in-breeding? Give a practical illustration.
4. Why is a queen called a perfect mother or female bee, when she gives birth to worker bees only, by mating?
5. What is the nearest cross one can make in in-breeding, and what relation are they to each other? (It seems to me that an uncle wedded to a niece is the nearest.)

NEW YORK.

ANSWERS. — 1. The drone has the same mother but not the same father. That makes him a half-brother, doesn't it? But his father is grandfather to the workers; that makes him uncle to the workers, doesn't it?

2. He is not an illegitimate son; so not a bastard. He is a parthenogenetic son.

3. "In-breed," says the dictionary, means "to breed or to follow a course of breeding, from nearly related animals, as those of the same parentage or pedigree; breed in-and-in." It would be in-breeding to have a young queen meet a drone from the same hive, or even with the relation less close.

4. The fact that she may give birth to offspring without mating only proves her a more perfect mother, if that is possible.

5. The mating of parent and child, or brother and sister is probably as close as you can get.

Sloping Cells—Full Foundation Sheets for Swarms—Too Much Honey in Brood-Chamber.

When I hive swarms on full sheets of foundation, they store a good deal of honey in the brood-chamber when first hived, and the cells are built sloping up, or slanting.

1. Will cells thus built be as good for brood-rearing later on as those built more horizontally?
2. How can I prevent them from building sloping cells, or get them built more horizontally?
3. Do you use full sheets to hive swarms on?
4. Do you advise the average bee-keeper to use full sheets when hiving swarms?
5. Do you use, and advise the use of, the full number of frames, or contract the brood-chamber for swarms, or how many frames should be used? I use 10-frame Langstroth hives.
6. What is the best way to prevent too much honey going into the brood-chamber when swarms are first hived?
7. Do you consider it a disadvantage to have swarms store much honey in the brood-chamber when first hived?

Bees swarm here on clover and buckwheat, so we get swarms from June 1 to the middle of August, and sometimes later. Buckwheat honey seems to sell a little better than clover in this locality, although we manage to sell the clover honey at the same price. PENNSYLVANIA.

ANSWERS.—1. I think so.

2. I don't know.

3. Either full sheets of foundation or drawn combs.

4. Yes.

5. Some advocate giving only about half the number of frames at first, each frame furnished with only a shallow starter, and, when these are filled, giving additional frames filled with comb or foundation. The idea is that when a swarm is first hived the bees will build only worker-comb, but not later on. I suspect that for most it will be more satisfactory to give at the start frames entirely filled with comb or foundation, in which case there would be no object in giving less than the full quota at once.

6. Give plenty of super-room. But unless a queen-excluder is used, this super-room should not be given for 2 or 3 days, for fear of the queen going up into the super, for it is generally supposed that the super given to the swarm is one that has already been on the old hive, having a good start in it, and the queen might prefer this to the bare foundation in the brood-chamber.

7. Too much honey would be bad, but I don't believe there's generally much danger of it.

Catching Stray Swarms in Decoy Hives.

Suppose a person sets hives containing frames with a trifle of foundation, in different places about his farm to catch any swarm of bees that comes. Is this right, or is it wrong in any way? ILLINOIS.

ANSWER.—I think I've seen it condemned, but I hardly see how there can be anything immoral about it. It does not entice bees away from their owner; and a swarm that goes into such a hive would leave its owner anyhow. What difference does it make to me where a stray swarm goes, if it soars off anyway?

Judging from Appearance when Bees are Working—When to Put on Supers—Clipping Queens.

1. How do you determine by the appearance of the bees when the gathering of nectar commences? Some bee-keeping friends of mine say they can. Please give me the philosophy of it.
2. Just how long after the commencement of nectar-gathering shoould one wait before putting on the supers? If this is governed by conditions, please explain them.
3. What would be the objection to honey put into sections without separators? Some of the prettiest section honey I ever saw was produced without separators.
4. Which queen leaves the hive at swarming—the young or the old one?
5. What is the best time of the day to hunt the queen to clip her wings?
6. How much do you cut off?

Bees are wintering fine. Mine are out-doors, and I have 100 percent alive yet. UTAH.

ANSWERS.—1 and 2. I don't determine by the appearance of the bees. I watch for the appearance of the very first white clover blossom, and as soon as I see it I begin putting on supers, although bees don't really begin storing until about 10 days later. I woudn't want to wait a day after they begin storing, and prefer to have supers on at least 2 or 3 days before, so the bees may make a start at storing in supers rather than in brood-combs. If I were not in a clover region, I'd try to learn when blossoms first appeared on whatever I expected a crop from. You can tell something about it by watching the bees. There's a lively getting around that shows there's something doing. You will also see the bees carrying in pollen. One of the surest ways to tell is by taking out a brood-comb and giving it a hard shake, when the thin nectar will fly out in a shower on the top-bars. A common rule with some is to put on supers when the bees begin to put white wax along top-bars and upper part of combs. I'd rather have supers on a little before that.

3. Without separators sections are built out more plump, and don't look so lean, but if you try to pack them in a shipping-case the bulged places will crowd into their neighbors and cause leaking.

4. The old queen with a prime swarm; a young queen with an afterswarm.

5. Doesn't matter much when, but there are less bees in the way during the gathering hours than early or late.

6. As much as you conveniently can of the two wings on one side. Half of them will do.

Foul Brood from Dead Brood.

In the summer when the weather is very warm, and the inside of a hive becomes so hot as to kill the brood and it rots in the combs, will that cause foul brood?

MICHIGAN.

ANSWER.—Did you ever know the bees to let it get hot enough to kill brood. And if the heat should kill the brood, the bees would clean it out before it would rot. And if they did let it rot it would not cause foul brood.

Exchanging Queens from Hive to Hive.

What is the best way to exchange queens from one colony to another, the hives not being of the same make so that the brood can not be exchanged? WISCONSIN.

ANSWER.—You can exchange queens by introducing each queen into the other hive with an introducing-cage, just as you would introduce a queen in any case. A little safer way will be to exchange both bees and queens. Shake out into any empty box both bees and queen of one hive, letting the box stay on the stand. Do the same with the other. Now exchange hives and let each set of bees run into its new set of combs. Thus each colony remains on its old stand but has a new set of combs.

Returning Swarms.

What is the best manner of returning a swarm to the hive from whence it issued, so as to make it stay, no further increase being desired? PENNSYLVANIA.

ANSWER.—It doesn't matter how you return the swarm; it will stay as well for one kind of returning as another. It is the condition of things in the hive that decides whether the swarm will issue again, and it isn't the easiest thing in the world to prevent it. The old-fashioned way was to return the swarm every time it issued, and if you don't mind the amount of work involved in returning it half a dozen times or more, the old way is good. Here's another way you may like better: When the swarm issues, return it and kill the old queen. A week later destroy all queen-cells but one. If you miss no cells there ought to be no more swarming.

Moths in Combs and Honey, Etc.

1. Last year I had several hives full of brood-combs and honey that I was saving to put my swarms in. Result of my saving—fat moths. This year I have 2 hives with brood-combs and honey, and what I want to know is how to keep the moths out until the middle of May or the forepart of June. If I smoke them out with sulphur will that help? and how often will I have to do it?
2. The moths even got into my comb honey which is upstairs. How can I prevent them from getting in there?
3. Is it true that moths can not live on comb honey in sections alone? The other day while looking over my comb, I found two, although they were not large, but they had been able to work a web in the comb clear across the section.
4. In cellar wintering in a damp cellar, do the bees need a larger entrance than otherwise? and should it be cooler, or warmer than 45 degrees?
5. Does the bluish-looking mold on top of the frames of a colony in a cellar indicate dampness in the cellar or not enough ventilation in the hive?

WISCONSIN SUBSCRIBER.

ANSWERS.—1. As late as the fore part of June there ought to be little trouble in any part of Wisconsin to keep them in a cool cellar. At least the worms would make very slow work there. You could take a look at them every week or two. You can also treat them to sulphur fumes (carbon bisulphide may be still better.) After giving them one good dose of sulphur, repeat it in about 2 weeks. If you use carbon bisulphide there ought to be no need of a second dose.

2. The easiest way is to get Italian blood. You see, the eggs are in the sections when taken from the hives. Of course you can treat the sections with sulphur or carbon bisul-

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phide about 2 weeks after taking them from the hive, but if you have Italians there will be little need of that.

3. I don't think it is true.

4. You need a large hive-entrance in any cellar, but it is more important in a damp cellar. A damp cellar also needs a little higher temperature than a dry one.

5. If it's the kind of appearance I have in mind—grey rather than blue—it hardly indicates anything wrong. Regular mold may indicate either that the cellar is damp or that the hive is not well ventilated, or it may indicate both. A low temperature also favors mold.

Charge for Pasturing Bees.

What is usually charged for pasturing bees? I want to take 10 or 20 colonies 10 miles from home. WISCONSIN.

ANSWER.—There is no sort of rule about it. It's just as you agree. I never agreed to pay anything; but I always left a liberal allowance of honey. In any case you should make such arrangement about it that your landlord will feel he has the best end of the bargain.

Introducing Queens.

1. What is the best way to introduce a queen?

2. What kind of a queen would you recommend?

3. What month is the best to introduce the queen? ILLINOIS.

ANSWERS.—1. When you have a queen sent by mail, instructions for introducing accompany her. They will likely be to let her stay caged in the hive a couple of days without letting the bees get at the candy, then remove the old queen and let the bees at the candy.

2. Italian.

3. Any time after honey is yielding well, say from the first of June.

Honey Gives Him the Stomach-Ache.

I am very fond of honey, but unable to eat it as it gives me stomach-ache. Kindly advise me what the trouble is, and how I am to eat it to avoid this distress. PENNSYLVANIA.

ANSWER.—Hard to tell what the trouble is. Possibly the honey is taken in connection with too much other food. Possibly too much liquid is taken at the meal. In any case, the probability is that whatever is the cause of the disagreement is something that ought to be changed anyhow, whether honey is eaten or not. Might be well to try taking a small quantity at a meal, not as a dessert after a meal, but as part of the meal, increasing as the honey is borne, and drinking between rather than at meals.

Mating of Queens from Different Localities.

1. Would it be advisable to make queens with drones bred from the same mother?

2. I got 4 queens from the same place in Texas. Would it be better to rear drones from one of them and queens from the other, to mate with for requeening my other colonies, which are black bees? or would you advise me to get a breeding-queen from some one else, and use drones from those I have? ONTARIO.

ANSWERS.—1. If you mean to mate a queen with a drone reared from the mother of the queen, no; and you probably couldn't do it if you tried.

2. Unless in special cases, it would be better to have the drones and the queens in no way related.

Italianizing Bees—"Tested" and "Untested" Queens.

1. We have 100 colonies of bees which we want to Italianize, but do not know the best way to go at it, as some of our hives have crooked combs. How can we introduce a queen to a colony which has crooked combs? Don't we have to get the old queen before introducing the new one? How would it be when introducing a queen to take a nucleus and place it in a hive, putting this hive containing the queen in place of the old hive, when most of the bees are out at work, letting the flying bees enter in the hive with the new queen? or would the bees kill the new queen?

2. Would it be best to buy queens, or to buy nuclei and rear our own queens?

3. How far away from other bees would we have to place a colony to insure pure mating?

4. What is the meaning of a "tested" and an "untested" queen?

5. Which of the Italian bees are considered tht best and most gentle—the Golden or the 3-banded? UTAH.

ANSWERS.—1. Yes, you will have to remove the old queen. A very good way to introduce a queen into a hive with crooked combs, is to straighten the combs, or transfer them into frames. Or, you can drum out the bees, putting an empty box over the hive and pounding on the hive till all the bees run up into the box. Then you can find and remove the old queen, let the bees return to the crooked combs, and crowd the cage with the new queen between the combs. Your nucleus plan will work, only the queen must be caged for 2 or 3 days.

2. You might compromise, buying a number of queens and rearing the rest.

3. You would probably be pretty safe at 2 miles, but to be entirely safe you might have to be 5 miles or more. No one knows exactly how far.

4. A tested queen is one which has been laying long enough so that you can see by the markings of her worker progeny that she has been purely mated. An untested queen has not been thus tested.

5. Opinions differ. Probably the most prefer the 3-banders.

Decoy Hives—Bees in Louisiana.

1. How do you fix decoy hives to catch swarms?

2. Would bees properly handled here be profitable? We have a large lake full of willow, some fruit, and lots of wild flowers during summer and fall, but we have no clover nor buckwheat. LOUISIANA.

ANSWERS.—1. There is no fixing needed, any more than in getting a hive ready for a swarm. If you put in the hive one or more empty brood-combs it will be more attractive to the bee-moth, for which you must look out.

2. I have no personal knowledge of your location, but it is very likely that you have other flowers that will largely take the place of clover and buckwheat.

Langdon Non-swarming Device—Early Work with Bees.

1. In reading over "The Honey-Bee," Bulletin No. 1, New Series, Third Edition, written by Frank Benton, I find the Langdon Non-Swarming Device, on page 104. What do you think of the device? I can not find anything about it in any of the American Bee Journals.

2. Mr. George Williams says, on page 53, that you get up before daylight and pull your colonies to pieces. Do you think that increases your honey-yield? INDIANA.

ANSWERS.—1. Great things were expected of the Langdon device when it was first made known, but the hopes concerning it were not realized, and for some years nothing has been said about it.

2. I never shake my bees merely for the sake of shaking them, and when I manipulate them do no unnecessary shaking. But Mr. Williams thinks the necessary shaking they get makes them work more diligently. I don't know whether he is right or not.

What Supplies a Beginner Needs.

I have 12 colonies of bees in good frame-hives. I am a beginner. What shall I order in the way of supplies? I wish to run for comb honey, and increase by natural swarming. I have nothing in the way of tools, and my time is limited, as I am a rural mail carrier. I have your "Forty Years Among the Bees." I also take the American Bee Journal and Gleanings in Bee Culture. All are fine. KENTUCKY.

ANSWER.—It is not an easy thing to tell what any one needs without pretty full particulars as to harvest and conditions. In general terms I should say that you should have on hand enough sections all ready in supers in advance, so that you can give to the bees as many as they would fill in the best season you have ever known, and then an extra one for each colony besides. Possibly you have had so little experience that you don't know what the bees would do in the very best kind of a season. Well, then, we might guess that in the very best kind of a year you would get an average of 125 sections per colony, although that may be putting it pretty low if you are in a good location. If your supers hold 24 sections each, as a good many supers do, it would take about 5 supers to hold the 125 sections, as we don't need to be so exact about it. But some colonies will fill more than the 5, and some less; you can't hold them to the exact number, and at the last there will necessarily be more or less unfinished sections on the hives when the season closes; so you ought to count an extra super for each colony; altogether, 6 supers per colony, or 72 supers of sections for the 12 colonies. Understand, only once in a while you will have a season when you will need so many; but you never know but what the next season may be a bouncer, and you must be prepared for it. What are not needed will be all right for the next year. Even if the season proves an entire failure, your supers will be all right for the first good season that comes.

As to hives, you will probably want to double your number, preventing all after-swarms, so you will need to have in readiness a hive for each colony, or 12 in all.

Getting Honey Out of Combs Without an Extractor.

Do you know of any method of getting the honey out of combs in wired frames without the use of an extractor? Where one has only 2 or 3 colonies of bees, the expense of an extractor is hardly justifiable, as the amount of honey would hardly pay for the machine, and yet the honey must be got out somehow, and should be done without destroying the combs. IDAHO.

ANSWER.—No, I don't think there's any way of getting honey out of combs either wired or unwired except by the use of an extractor. Of course you could wash the combs or melt them, but I'm sure you mean to keep the combs whole.

Increase in July—Hive for the Farmer.

1. Could any increase be made with a queen received in July this season?

2. I have 20 colonies in 3 kinds of hives, most of them 8 and 10 frame Dovetail hives with Hoffman frames. I would like to get them into one kind of hives and frames. Would the Root Dovetail hive take the Miller frame?

3. For the average farmer who will not handle frames very much, which do you think would be best, the 8-frame Dovetail, the 10-frame Dovetail, or the Danzenbaker? ILLINOIS.

ANSWERS.—1. Yes, you can do a lot of increasing after that time, with plenty of colonies to increase from. At the time you introduce your new queen into a colony, make another colony queenless. A week or 10 days later destroy all the queen-cells started in this latter colony, and give it brood from your new queen. That will give you queen-cells of the new stock, which you can give to nuclei, and these nuclei you can gradually strengthen by giving brood well matured from strong colonies. Of course you will be wise not to draw too much brood at a time from any one colony, always leaving it at least 4 frames of brood, for if reduced too much it might not recover so late in the season.

2. Yes, the Miller frame is the same size as the Hoffman, and fits the Dovetail hive.

3. The 10-frame Dovetail is a safe choice for any farmer.

Introducing Queens — Control of Queen-Mating — Long-Tongue Italians—Nucleus Method of Increase.

1. While looking at one of my hives, March 13, I noticed a queen fly from the entrance and make a few circles and then go back to her hive. It was about 12 o'clock, and the thermometer stood at 54 in the shade. Was not that an unusual occurrence for that time of year? The queen seemed small and took wing very easily.

2. I would like to have your opinion on this way of introducing a queen that comes through the mails: Pry the perforated piece of tin off the end, then put queen-excluding zinc over it and let the workers pass out. Then take from the colony you wish to introduce the queen to, enough workers to fill up the cage, then put back the perforated tin, and let the bees eat the candy out before they release the queen.

3. Do you think that if we could control the mating of the queens and drones that we

(Continued on page 146.)

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Producing Extracted Honey

BY F. GREINER.

From what I have written in different papers on the subject of honey production, it may appear that I produce only comb honey. Some have asked me why I say so little about producing extracted honey, and the answer is, the production of the article in liquid form has always been a side-issue with me, although of late years I am having an increasing call for it, to be used on the table and to be a strictly fancy article. To meet this demand I am obliged to run my most distant out-yard for this product, on account of my nearer yards not furnishing an article to suit my customers. The lighter-colored the honey the better it is liked, although I also produce a limited quantity of buckwheat extracted honey for some special customers, and so I often move a load or two of bees into the hills where buckwheat is grown. Usually, I am successful in this, but 1908 was a season which put all previous years into the shade. From 35 colonies I harvested only about 100 pounds.

The locality where I produce white extracted honey sometimes furnishes a little inferior honey at the beginning of the honey season, early in June, so I have to be on my guard; but after the clover commences the honey will be fine to the end. As soon as the colonies become reasonably strong, each is given a set of extracting-combs (5 inches deep, in the clear) over an excluding honey-board. The brood-chambers contain 8 combs, equivalent to 10 Langstroth frames, the extracting supers containing only 7 combs.

From time to time, as needed, I add more supers, always placing the empty combs next to the brood. I find that of the colonies run in this way nearly 50 percent contract the swarming fever, and it is necessary to make examinations every 6th day, the same as with the colonies run for comb honey, in order to head off all swarming. I feel sure that more breeding room would prevent the swarming, or reduce it to a very small percent; but not wishing to adopt a larger hive, a hive containing more than 8 combs, I continue my practice as outlined, and I make my brushed swarms the same as with the comb-honey colonies.

In a good honey season the hives soon become so tall that it is not practical any more to tip them up for an examination from the bottom. In this case, some of the topmost supers need to be removed, either to be taken home or placed on other hives which are not doing very much work; in this case I let the bees go with the honey. My aim is to have all honey on the hives as long as possible, and not do any extracting till I can make a business of it, and move full loads to the home-yard where the extracting is done.

I realize that a loss occurs by not extracting the combs as soon as taken from the hives, and while still warm, but I cannot yet see my way clear how I could do so.

When the time comes to take the honey, I aim to do so, when there is a prospect of a warm night; then the supers are snatched off as rapidly as possible, freed from the bees, and loaded on the wagon. I can usually take off a wagon-load in an afternoon, load and move it home (a four-hours' drive), and reach the place of destination by 9 or 10 o'clock p. m. Sometimes I have not started till dark, on account of the difficulty to get the load away from the bees. However, it is possible so to handle the full supers, and by so keeping everything covered with escape-boards, or perhaps otherwise, that the bees will not become stirred up and demoralized.

For convenience sake in loading, I make use of special racks having tight bottoms, and holding either 10 or 20 supers each; and when the uppermost supers in them are covered up by escape-boards, the honey is not only perfectly safe against robbery on the bees' part, but what few bees are still remaining in the supers, may work their way out. Thus I have been enabled to move my honey even in daytime, when no honey was being gathered, with but little danger to man or beast.

When arriving home, the honey is taken to the warm and tightly closed honey-house, and the extracting is begun at the earliest opportunity to prevent its becoming colder than there is any need. It is the best I can do under the circumstances. Occasionally I have started the extractor at once, and worked all night.

In all my operations with bees I employ no help, doing all of the work myself. This might not be considered business-like by some of the fraternity, but money is not all we are after. We do not wish to take a foreign element into our family. While it may be true that bee-keepers generally are a better, cleaner set of men than the average laboring class, yet we feel that we can enjoy our family life better by not having strangers with us at all times. We certainly thus avoid the risk of taking into our family an undesirable element, men who will pollute our homes with tobacco, whisky, etc. We are satisfied.

As to the manner of extracting the honey: I do not yet run my extractor by power, although I had contemplated making the proper arrangements for this season. I still turn my Cowan by hand. The uncapping is done with a Bingham honey-knife; cold, no hot water; I find it unnecessary; a large, long box with an inserted screen bottom holds the cappings and allows them to drain. My combs are not all fully sealed, although the majority are. By giving plenty of empty comb the bees are apt to leave the combs along the edges unsealed, particularly so when the season suddenly and prematurely comes to an end, as it did the past year. In such a year the supers also do not become tiered up so high upon the hives but what we can leave all with the bees till the end of the season; and I flatter myself that such portions of the combs as are not sealed contain honey fairly well ripened, although I confess I do not know this to be an absolute fact.

On an average, my combs are more than three-fourths sealed; comb after comb has every cell sealed, and the resulting honey is usually of good body. It is left in the tanks or open barrels covered up with cheese-cloth till all the little particles of comb, bee-bread, etc., comes to the top, which will take a few days. After all foreign matter is skimmed off, the honey is ready to go into the 60-pound cans.

Honey to be put up in glass will soon become cloudy, and later granulate. To prevent this, or defer it for a period, I find it a good practice to heat the honey to about 140° Fahr., before filling the cans or bottles. Even at 130° Fahr., honey becomes perfectly clear, but it must be kept at this temperature for a longer time.

Colonies run for extracted honey throughout the season are, sometimes, short of stores for winter and must be fed. Where fall honey may be had the bees may be allowed to store it in the brood-combs. This provides sufficient stores to carry the bees through the winter and spring here in my locality, and I do not find it necessary to feed sugar.

I usually select the bees from this distant out-yard to move into the buckwheat section, because there is seldom any fall honey-flow. So as soon as the white honey season is done, and before buckwheat commences to yield honey, not far from August 1, I do the moving.

Naples, N. Y.

Quantity Not Quality of Food Decides Royalty

BY W. W. MCNEAL.

Careful research has failed to disclose any evidence to verify the teachings of orthodoxy relating to the food of a queen-larva. The term "royal jelly" has a fanciful, high-sounding note, but it leads one away from the truth. Nature is not partial to royalty in that manner. It would not be in order of economy for the nurse-bees to prepare several kinds of food for the larvæ. The sooner we disabuse our minds of the belief that there is some occult power in the food, the sooner

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we will be able to rear uniformly good queens.

When Nature would lavish her charms upon any particular larva, she uses the simpler means of increasing the regular ration. Any worker-larva is a queen-larva at birth, and if it has all it wants to eat, the transition from a worker to a queen is sure to follow. The expression that "too much is just enough" is exemplified by the amount of food set before the queen-to-be. Taking the worker-bee as a unit, the perfect queen necessarily represents the best possible development along those lines. Therefore the queen with all her physical graces is just a big worker-bee with a new and greater instinct than her common sister. The reproductive powers of a virgin queen and a worker are the same, for the eggs of both produce only males. When the queen mates with the drone she comes into full possession of her own. She is then said to be fertile, for her eggs are productive of both male and female life. The reproductive powers of the drone are always identical with female life, and *vice versa* the queen. But the fertile queen has the distinction of being able to choose the sex of her offspring. This is the resultant factor, however, in the provision Nature has made, whereby the distinguishing features of the drone become part and parcel of the queen's reproductive system at the time of mating. It is a wise provision, for the danger arising from frequent flights to meet the drone would be a greater menace to the welfare of the colony than the effect of inbreeding, were copulation to take place within the hive. One could hardly dodge the inference that any difference relating to sex in her offspring would be optional with the queen after that event in her life.

The nurse-bees can and do regulate the possibilities that lie wrapped up in every fertile egg, but they can't change the sex of it. In proof of this I have only to mention the fact that the queen always seeks the embrace of the drone before entering upon her duties as mistress of the hive. Nature would not hazard the life of the queen by sending her forth in quest of something not essential to the life of the colony. If the nurse-bees can reverse the existing order of sex just as the occasion demands, the drone would be utterly a nonentity. But all worker-larvæ are females to begin with, and the destiny of each is made sure by means already stated. However, considering that the queen and the worker each owes its rank in life to the manner in which it was fed while maturing, it follows as a matter of course, that queens can be reared, representing at mature life, every stage of development from the polished physique of a perfect queen down to the common worker-bee.

The conditions essential for the best development of a queen-larva, are (1) all the food it can possibly consume; (2) perfect quiet; and (3) a uniform temperature up to the time the young queen emerges from the cell. When the cell is not kept good and warm, the immature queen cannot appropriate the food as she should, and the effect is the same as if the proper amount had not been given her. The period of incubation will be lengthened, and her life shortened thereby. Any plan or system that does not keep the colony from dividing its forces till the queen hatches, is faulty, and should not be used. Queens reared under the swarming impulse are not always good queens, for reasons just given.

There should be no compromise in the queen's rank, for the temperature of a worker, though usually a good thing in its place, will prove the undoing of a queen. But it is the quantity and not the quality of the food that is responsible for whatever difference there may be between them. I fully believe I am right in this matter, but if any one can prove that I am not, I shall be glad to hear from him. The nurse-bees have no power over sex through the agency of the food. The hidden power which determines that all-important factor must be obtained through the medium of the drone. When the queen has met the drone and usurped his powers, she never again ventures beyond the confines of the hive, save to accompany a swarm.

My observations all tend to show that the fertile queen is not dependent upon any agent or thing whatsoever for the exercise of her doubly constituted powers when depositing eggs in the cells of worker-comb. And, furthermore, Nature would not depart from her customary rulings in so striking a manner if her plan of special provision for fertilzation did not include special endowment of the gift of reproduction.

Amelia, Ohio.

Can for Holding Honey-Cappings, Etc.

BY F. P. DAUM.

In the December American Bee Journal, J. R. Bogart asks for a description of a can to hold cappings and straining honey, etc. I have one that suits me all right, which I had made at a tin-shop for $6.50. I am sending drawings, and will describe them as follows:

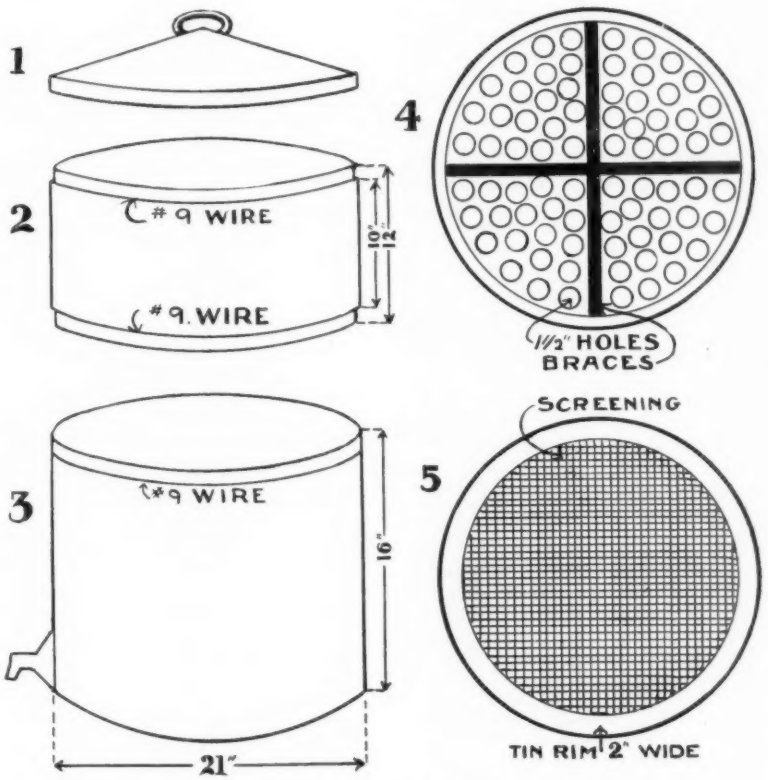
No. 1 fits outside of No. 2.

No. 2. fits outside of No. 3.

No. 4 is the permanent bottom of No. 2.

No. 5 is the loose (strainer) bottom of No. 2.

The bottom inside is 16 x 21 inches; the cappings holder inside is 11 x 12 inches; and the strainer is 21 inches in diameter.



CAN FOR HOLDING CAPPINGS.

I hope these illustrations and description will be a help to Mr. Bogart, as well as to others.

Clinton, Mo.

No. 4.—Colorado Bee-Keeping

BY R. C. AIKIN.

In No. 3, I discussed the question of stimulating brood-rearing by breaking of stores, by readjusting so as to put the honey near the entrance where it would be uncapped and carried back—anything that would cause the bees to handle honey when there was nothing being gathered from the fields. The same question was up for discussion at

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our Colorado State convention since I wrote the matter referred to, and I feel that I ought to give the reader the benefit of what developed in the convention, as the subject was handled there by some of the big guns.

By some it was argued that feeding, the presence of abundance of stores, or the making of the bees manipulate or handle these stores, would not cause much increase unless there was abundance of pollen in the combs, or being brought in. Many Colorado locations are short on pollen; this is so true that such locations often find the brood-combs almost totally bare of pollen. In my own location in 20 years I have never seen a surplus of pollen in a single hive; I think in only one year in that time the bees did not hunt for flour and other substitutes in the spring, and that one time was a spring that the weather was such that they could fly but very little until pollen was to be found on trees.

Now there is no doubt in my mind but this scarcity of pollen does retard breeding to considerable extent; but that its absence will fully nullify the effects of feeding or handling of stores, I am not prepared to say; my opinion is that the feeding will help. To have a general opinion is not conclusive, and to make comparative tests by experiment, so we have an array of facts, both pro and con, few of us ever do. Because a man gets well of a sickness after taking such or such medicine is never proof that the medicine cured. All in all, we do know that when bees handle both honey and pollen they will breed better than if either is lacking. A shortage of honey-stores is easily remedied; but the lack of pollen is by no means so easy, at least with present knowledge on the subject.

After all was said at the convention I am still convinced that there is benefit derived from my instructions in any case, and if there be plenty of pollen in the hive that is easily available, or a little coming in, much will be gained if the bees are made to handle stores daily. I wish I had some of the pollen the East can spare.

LARGE HIVES.

Regarding the question of large hives, and the getting of these by storifying with the 8-frame, or any other, for that matter, let me say that our people in convention brought decided testimony to bear favorably on the subject. This matter is so important that it ought to be repeated and urged upon the apiarists. The Dadants have for many years urged large hives, and I must say they have the best of the argument—they are right. I notice quite a tendency among our Colorado apiarists to the use of larger hives. I would not recommend the 10-frame hive, but rather the use of two 8-frame bodies. We want an "elastic hive," as some writers used to put it; and another thing is to have the extra proportion in depth rather than width. There is no question about the truth of the theory that a hive not too wide, but deeper than wide, serves the bees better than a shallow wide one; and if the body be in two parts it is elastic, and can be quickly made shallower when it will not injure the colony and will favor results in surplus.

The 8-frame super gives better results in sections than a 10, and this is another reason for using the 8 size. If the apiarist has a mixture he can still use but one size of super. I have for several years used only 8-frame supers on both 8 and 10 frame hives; and this leads me to discussing the question of honey-boards. I know that but few people use honey-boards in comb-honey production, but it is mainly because they do not know their value, and because the manufacturers do not combine them with the hives as sent out.

SLAT HONEY-BOARDS.

I have used all kinds of brood-frames, from the thinnest and narrowest top-bars to the thickest and widest, and I know that bur-combs will be built through any of them; and with the thickest and widest at times, and sufficient quantities to make the use of a slat honey-board a very good investment. Some burs will be built through even the honey-board, too, but it saves a big lot of attachments of comb and honey to the under side of the super. The super should be as clean on the bottom as possible, because if there are bur-combs they must be cleaned off before the super be tiered up or placed over another; if not, the tops of the under sections will be smeared with wax. If the bottoms of supers be clean the operator can handle them just about twice as fast in readjusting or in removing.

The honey-board should be made of narrow slats. I use ⅞-inch, ripping them from common thickness boards. Our factory people persist in making the slats wide, usually from 1⅜ to 1¾; this is too wide. Another fault with the factory people is in making the board with a slat set plump against the rim-piece, so that bees climbing the side of the brood-chamber must turn inwards to find an opening to get above. If anything this is a more serious fault than the wide slat. The rim-piece should be of ¾ or ⅞ width—the same as the thickness of the hive-body sides—then the first slat should be set leaving a good free opening so that all bees climbing the hive side can go right on up the super side, too; and every super should also have a free passage-way up the side, an uninterrupted climb-way to the roof. This is important, and must not be overlooked in hive-construction.

In nailing the honey-boards I do not try to make them break-joint (that is, to have a slat come over the space between top-bars); this feature is a good one, but so hard to maintain because of varying position of the frames if a follower is used—the follower may be on one side now, and tomorrow be on the other side. The slats are just put as close together as can be to let the bees pass freely through.

If you have both 8 and 10 frame hives make just as many of these slat-boards as you have hives, but with this difference: For the 10-frame hives make the board cover the hive—that is, if the 10-frame hive is 2¼ inches wider than the 8, each side slat for the rim will be 1⅛ inches wider than the rim side of the 8-frame board. This of course breaks that direct run up the hive side, but the bees, after turning inward till they find the opening, can then continue on up the super side. With such honey-boards you can use 8-frame supers on any width hive. I use the T-super, and they are made with ordinary thickness ends, and, of course, are shorter than the hive-body, so I make the end-piece of the rim enough wider so the hive-body is fully covered, and still the shorter super covers all openings.

HOW TO CLEAN HONEY-BOARDS.

The honey-boards usually come off at the close of the season with lots of wax adhering in bur-combs. To clean them I heat a tank of water to boiling, then with a pile of the boards beside me I dip them one at a time into the water, churning it up and down until the wax is melted from the end, then reverse and churn as before, until the other end is clean, then flip it onto a pile. The boards come out hot and are practically dry in a few minutes. It is a little warm on the fingers, but not unbearable, and if you have never tried this way it will surprise you how little time it takes to clean several hundred; in fact, you want to work rapidly to get best results. Keep the water boiling, and that throws the accumulating wax to the ends, while you churn in the middle, and the air escaping from the wood and the bur-combs makes an additional bubbling and boiling so that there will be a space of several inches about the churning board that is free from wax. When wax gets so it crowds the churning place, skim off some of it. You can clean a board this way while you would be thinking of whittling the wax off, and the wax accumulations will pay you *big* wages for the time emplodyed.

TOP-BARS WITH GROOVE AND WEDGE.

I know such top-bars are popular, but they are so just because the factory people make them so, and the users never tried other kinds in the right way, if they tried any other kind at all. There is no use whatever in a groove and wedge to fasten foundation; they are worse than useless, being a source of trouble to bee-keepers, and add to the first cost of the frame. Make the under side of the bar just as plain as plain can be. To fasten foundation fix a board about ¼-inch shorter than the inside measure of the frame in length, and a plump ⅛-inch narrower than the net inside measure up and down. On one side, about the middle, nail lengthwise a cleat an inch or so thick for finger-hold, and in one edge near each end drive a nail so that when the frame is laid over the board with the top-bar on these 2 nails the board just comes up a scant half way through the frame. In like manner put one nail only in the other edge of the board, but have this nail at the middle of the length. With 2 nails, one near each end for the top-bar to rest on, and the one at the centre for the bottom-bar, every frame is bound to lie solid without a teeter.

Melt some wax in a cup about the size of a pint dipper or possibly a little larger—this can be done over a common small-burner kerosene lamp; with the lamp you can guage the heat, for the wax should be just thoroughly melted and no more. Grasp the board in the

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left hand palm up, holding by that strip-handle nailed at its centre, with the right hand drop the frame over the the board, and put the thumb of the left hand against the bottom-bar, reaching the thumb up so its pressure comes on the uppermost edge of the bottom-bar; held in this way the bottom-bar is held firm and snug to the edge of the guage-board, and the top-bar is held down snug against the 2 short-stop nails, and with a ⅛-space crack the entire length between it and the board. With the right hand lay the starter on the board, and against the top-bar, inclining the board from you, and also inclining from your left to right, then with a common tin teaspoon pour wax, starting at the high end and let it run along the bar and the starter until it reaches the other end, when you bring the board to a level so far as its length is concerned. However, to keep the wax from passing down between the starter and wasting instead of running lengthwise, you must incline the board so that the top-bar is almost level crosswise. It takes only a little bit of practice—just a few trials—until you learn the angles at which to hold the frame. If you get the wax too hot it will melt the starter, and is much more inclined to spread and waste; if too cold, it congeals too quickly and does not run freely.

As fast as you get the wax run on, pick off the frame and put it on a pile beside you, until you have quite a bunch of them when you lay down the guage-board and pick up the frame and run a line of wax on the *other* side of the starter, until you have cleaned up the pile, when you run another batch the first side on the guage-board to be served in like manner. This puts a line of wax on each side of the starter, and it is there to stay. It is quicker done than to put foundation into the groove and put the wedge in, and while the wedges will shrink and drop out this will stay. And if you ever want to cut out the comb and put a new starter in, you have a good, smoothe surface to work on. It does not take any more wax, either, at least but a trifle more, and any dirty or off-grade wax will do the job.

Colorado and all of us dry-climate bee-keepers "have a kick coming" on the frame with groove and wedge, for unless we use the frame at once after putting the starter in, or nail the wedge fast, they drop out, then we have comb built in all kinds of shapes, mixed with wedges down on the bottom-bars until it is like tearing a hive to pieces to get the frames out. Let me repeat, that the method here outlined is easier, quicker, cheaper and *better*, than the wedge method. Try it.

Loveland, Colo.

(To be continued.)

Superseding Queens—Uniting Colonies—Shallow Feeders

BY EDWIN BEVINS.

Considerable has been said recently in the bee-papers as to whether the bee-keeper had better do some superseding of queens himself, or leave the matter entirely to the bees. My own experience convinces me that it would have been better for me if I had taken a large hand in the business every year since I came to have any considerable number of colonies. Last season, just after the white clover harvest was over, I concluded to requeen quite a number of colonies that had not stored any surplus, by the plan used by Mr. Chapman in requeening his old apiary.

The writings of Dr. Miller had convinced me that bees are not so foolish as to use larvæ too old for development into good queens when they have larvæ of all ages to choose from. I made queenless some 12 to 15 colonies, allowing the bees to requeen from their own brood, except in one instance where the brood was so scant that a frame of brood was given from another colony.

My examinations showed that but 4 colonies had made any attempt to supersede their queens. Three of them made a success of it. In one colony I found one sealed queen-cell, and as no other cells had been started I concluded that it was a case of supersedure, and did not look any further for the queen. Later I saw evidences of the work of laying workers, and, on examining that sealed cell, I found in it a dead queen.

My experience seems to indicate that but few of the colonies one desires requeened will requeen themselves at the time the work ought to be done for the advantage of the apiarist. Some will not do it at all, as is proven by the fact that I found 2 colonies fairly strong in bees that were entirely without brood of any age. I have seen but one criticism of the above plan of requeening, and that is that one perpetuates all the bad qualities of some of the queens superseded. This is not necessarily so, as an exchange of brood is not difficult, putting the brood of the undesirable queen where it will not be used for queen-rearing, and giving some from the hive of a better queen.

In this case, it seems that it would be a good plan to practise the method only on colonies having satisfactory queens, and to get satisfactory queens in the other colonies as soon as possible.

By a "satisfactory" queen I mean, of course, a queen of a strain you are willing to perpetuate.

UNITING COLONIES.

I notice in Gleanings that Editor E. R. Root has just made the discovery that uniting bees by placing one or two thicknesses of newspaper between the two hives is a good thing. This is a method I have long practised, and I described it in the American Bee Journal several years ago. Shortly after I mentioned the method in the American Bee Journal, I noticed that Dr. Miller advised one of his questioners to unite in the same way. I do not claim that the method is original with me. Probably I got the idea from some writer in some one of the bee-papers. What I claim is that the method is nothing new.

SHALLOW FEEDERS FOR SUPERS.

I wrote something quite a while ago about the desirability of having some shallow Hill feeders to use in spring in chaff-packed comb-honey supers, on top of the brood-frames. I found difficulty in getting the shallow feeders, but the Dadants helped me out. They had some of the perforated covers to the quart feeders, and got their local tinner to make feeders half the depth of the quart ones to fit the covers. I used some of these last spring in supers having chaff cushions in them, and found them to be very convenient, as the cushions could be easily adjusted to prevent the escape of heat from the brood-chamber. The supers with their chaff cushions are left on all of my hives till about the beginning of the honey-flow, as I believe the temperature of the hive is kept more uniformly warm than it would be without them.

Some claims used to be made for the advantages of having single-walled hives, and having them stand out in the sunshine all through the spring; but I have learned to be somewhat doubtful about these advantages. The spring is not all sunshine. I leave the winter packing of straw around three sides of my hives till the middle of May, and sometimes later.

Leon, Iowa.

Laying Workers — How to Get Rid of Them.

BY G. M. DOOLITTLE.

Before me lies a postal card which reads as follows:

"I had a colony last summer which had laying workers. I did everything—moved hive, gave brood, etc., all to no purpose, the colony finally dying in early fall. What can I do to save a colony under such circumstances in the future? Would it do to unite them with another colony? Would these workers spoil that colony also? Please answer in the American Bee Journal."

Laying workers confront every bee-keeper of any experience, sooner or later, especially if he does not keep a good lookout to see that no colony goes queenless more than 24 to 30 days, or for 2 weeks or more after all brood has emerged from the cells. If no queen is provided, and especially if the bees are of the Cyprian, Holy Land or Italian races, the colony will, soon after all the brood has emerged, set apart some of the workers, from one to several hundred, installing them as queens, after which it is extremely difficult to cause them to accept a queen of any kind.

All colonies rearing young queens should be looked after from 20 to 24 days after the issue of the prime swarm or the taking away of the old queen, and if eggs are not found the colony should be given a frame of which many cells contain eggs and small larvæ, in which case, if the young queen has become lost from any cause, they can rear another. This will keep the bees from installing workers as queens, and at the same time the building of queen-cells on this brood is a sure indication of queenlessness, and when cells are thus built it is better, if possible, to introduce a laying queen at once, for by the time the bees can secure a laying queen from this brood the colony will begin to become populated, and by the time the brood from her eggs emerges will be nearly ruined from the loss of bees dying from old age.

But, if the colony has a laying worker,

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what is to be done? That depends largely upon our wants. If we do not care for an increase of colonies, probably the best thing to do is to unite the colony having such workers, with one having a laying queen, which should be done by thoroughly smoking each near sunset, when the combs should be taken out of each hive and alternately placed in another hive, so the bees will be so mixed up that they will not quarrel; or a new hive may be placed on the stand of the colony having the queen, when the bees may all be shaken off their combs in front of this hive, shaking them off the frames alternately so as to mix them up completely, setting the frames having the most brood and honey in the hive, leaving out the rest.

If, on the other hand, we wish to keep all the colonies we can, the colony having the laying workers may be treated in this way: Go to several colonies in the apiary which can spare a frame of brood and take enough frames of brood (one from each) to fill out the hive, or at least two-thirds fill it, being sure that you do not get the queens from any colony with this brood and bees, for we want the bees that are on the combs to go with them in this case.

Now take the combs out of the hive having the laying workers, or what is better, set this hive off the stand it is occupying, placing another hive on this stand, when the frames of brood are to be placed in it. If it is filled only two-thirds full, fill out the vacant space with dummies, as such a colony would build only drone-comb if it built any at all. As each of these frames of brood and bees have a different scent, they will not quarrel when thus mixed up, for each bee that another meets is a stranger, which so confuses them that they do not know what to fight for. When all is fixed and the hive closed, carry the hive having the laying workers in it several rods away, and after having drummed on it a little so the bees will fill themselves with honey, open the hive, take the frames out and shake every bee off on the ground, thus compelling them to fly separately back to where their old home used to be. Arriving here they find a different state of affairs existing from what there was when they left, and if the laying workers get back (which some claim they cannot do) they seem to accept the fact that their reign is over. In any event, the bees seem to be in a condition to accept a queen or rear one, as the circumstances are placed before them by the apiarist.

It is usually best to give them a queen, if possible, or, what is next best, a queen-cell just ready to hatch; but if neither can be done, they will do fairly well at rearing one, as the brood which has been given will keep emerging till they get a laying queen, so that they are nearly or quite as well off, even if now left to themselves, as a colony would be which had cast an after-swarm.

I have frequently gotten rid of laying workers by setting brood in the hive having them, and shaking the bees off their combs at the entrance, letting them run in at once; but as many as 5 frames of brood are needed so as to give enough bees to overcome the influence of those desiring to cleave to the laying workers. In this case, as in the above, the colony is not allowed any of their combs in which the laying workers have laid, for thus allowing them their combs gives them an advantage over the bees that have come on the combs of brood, which advantage we do not wish them to have.

The reason why the questioner failed with the brood was in not giving enough of it, or in not giving bees with it, or else in allowing the bees having the laying workers to retain their own combs.

The Cyprian, Syrian and Holy Land bees are much more liable to have laying workers than the Italians, and the Italians are somewhat more inclined that way than are the German bees, well known as the black bee of this country. The first three named varieties will frequently fill the cells with eggs, which, after being "fed and cradled," will give only drones, and this while the young queen is becoming fertile and laying, thus hurting the combs and the prosperity of the colony very much. However, these races of bees do not cling as closely to such laying workers when they have them as do the Italians and the blacks, so they are more easily gotten rid of.

Borodino, N. Y.

Chunk Honey for Small Bee-Keepers

BY ALLEN LATHAM.

We read not a little of chunk-honey production in Texas, and can readily see that such honey can be more easily produced than can section-honey. The local demand settles whether we shall produce this or that sort of honey. In the North there is a poor market for comb honey except section-honey, and until we create a demand for chunk-honey we cannot profitably go into the production of the same in large amount. For the small bee-keeper, however, and for him who does not care to go to the trouble of manipulating his colonies for section-honey, the production of chunk-honey is an excellent thing.

Chunk-honey production has two distinct advantages—less labor is involved than in section-honey production, and less trouble with swarming. With any sort of hive it is an easy matter to supply a super of empty frames, having, except in the case of one or two, only narrow starters of foundation. One or two frames should be to a greater or less extent filled with virgin comb. Even without excluders a fair amount of honey will be obtained thus at a trifling cost, and with excluders the very choicest of honey will reward one's efforts.

Simple as such a method is, it involves more labor than many bee-keepers (more properly bee-owners) care for, and doubtless many a man would welcome a method which calls for almost no manipulation, and yet at the same time is attended by almost certain honey crops.

For some 6 years I have run a small apiary upon a certain hill in Norwich in which I term my let-alone hives. During that time only two swarms have issued so far as I know, and I have harvested an average of 50 pounds. Only one season proved a failure, and that was due to the bees suffering from pickled brood. Last year (1907) I harvested 600 pounds from the 10 colonies, and this year 550. I practice visiting this apiary twice per year for manipulation—once in the spring to see that each colony has a good queen, and once in the fall to take the honey. Sometimes the spring visit is omitted because of lack of time.

During the past year I have run some 60 of these let-alone hives, and harvested an average of 50 pounds of honey. I have not put in over 3 days of labor on these hives this year, aside from the time spent in caring for the honey. Having but little demand for chunk-honey I strain the honey to sell bottled. Strained from virgin comb it is the equal of the best extracted, and superior to most extracted honey.

These let-alone hives are extremely simple, though their construction involves certain fundamental principles which unquestionably have much to do with the success attendant upon their use. It is out of the question to give a minute description of these hives in this article, though I will mention some of their cardinal points:

The hives are roomy; they have the storage apartment back of instead of above the brood; they have ample entrances with space below the front frames; the frames hang parallel to the entrance; a sheet of excluder zinc separates the brood-chamber from the store-chamber.

Simple as this hive is in construction, it answers every need, and demands intelligent though minimum amount of care. I have run them now for 7 years, and each year I discover some simple improvement in construction or in manipulation. No time is used upon this hive in preparing for winter, for the hive is constructed with particular reference to the needs of the bee. If one is kept from visiting these hives for any reason, no serious harm would result if 2 or 3 years elapsed, barring the possible loss of the queen.

Think for a moment of going to one of these hives late in November and removing 140 pounds of good chunk-honey, the entire labor put upon the hive previous to that covering a period of time not exceeding 10 minutes. Last May I opened up one of my hives on Raymond Hill and noted that the queen was all right. I did not see the hive again till Nov. 27. Upon that date I took out 140 pounds of honey, most of it of the finest quality. This hive has 13 storage frames, each 13 x 17 inside measure, with an upright in the middle of the frame to prevent slumping of the comb in hot weather. In this case the 13 frames were full from top to bottom — 26 beautiful chunks of honey, each 13 by about 8½ inches.

These hives are not perfect non-swarmers, but the swarming does not exceed 20 percent. It is far less than 20 percent in some apiaries, and 50 percent in others. I am hard at work solving the problem, and am fairly confident that I have solved it already. I hope soon to cut down the swarming to 10 percent. Of course, I do not see the swarms, and they go to the woods,

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and it is only by the condition of the colonies in the fall that I can judge of the amount of swarming.

Readers of the American Bee Journal can make no mistake in making up a few of these hives and setting them upon the farm of some friend where there is good pasturage and few bees.

Norwich, Conn.

"Survival of the Fittest"—Among the Bees

BY ADRIAN GETAZ.

Some time ago I found in a magazine, a paper on the West Indies. Among other things, was a statement to the effect that the bees introduced there, finding out that there is no winter, and therefore no need of making provisions, finally decide that gathering enough for the present needs is all that is necessary; with the consequence that the apiarist fails to get any surplus.

To me such statement sounds ridiculous, to say the least. I am more and more convinced that the bees, like all other animals, act through instinct. That instinct prompts them to do certain things when they are in certain conditions. But never mind. Let us suppose that the bees are intelligent enough to know that winter provisions are needed. How could they know that there is a winter coming? Those that passed through the previous winter died in the early spring. Three or four generations have passed away during the summer, and when the next winter comes, none of the bees living knows anything about it.

Assertions similar to the one above quoted have been frequently made, not only concerning the tropical countries, but even in regard to Florida or other places having little or no winter.

I do not know how much truth there is in those assertions. I do not know what causes the supposed laziness of bees in such countries. It may be that the temperature is too high to permit the bees to work during the largest part of the day. And it may be that, while the explanation given is wrong, it may nevertheless be true that the bees transported into tropical countries eventually get to be less active than those living where the winters are long, and provisions are necessary.

If it is, which, after all, is very likely to be so, it comes through the great law of Nature, called the *Survival of the Fittest.*

Take a temperate or cold country, for example. Suppose 2 colonies—one active enough to amass sufficient provisions to go through the winter; the other just active enough to make what might be termed "a good living." During the summer this latter colony would probably be the stronger. The bees being less active, and therefore less exposed, would live longer and therefore be more numerous. The queen not being hampered by an excess of honey in the combs, would probably lay more, and thus also add to the strength of the colony. But at last the winter comes, that colony dies for want of provision, while the other *survives.* The same process goes on from year to year, with the result that the bees of that country will be good honey-gatherers.

But suppose that these 2 colonies are in a country without winter. Then the second one, being the stronger, will have the best chance to live, and send out good, strong swarms; and in the course of time, the bees of that country will be a race gathering nectar enough to prosper and do well, but no more.

Many people in reading the above will say at once: What do I care about the "survival of the fittest" or the tropical countries? The honey, or the dollars that it brings, is what I want.

And yet there is a valuable lesson in it. It shows that the bees and all other animals and plants, and, even to a large extent, the human race, are what the conditions under which they live make them. It shows that like all the other domestic animals, the bees are, or might become, what we make or might make them. It shows the importance of proper management to obtain the qualities desired in our bees.

Knoxville, Tenn.

Views of an Indiana Apiary

BY CLARENCE WOOLBRIGHT.

I am sending some photos of my apiary, also of some appliances which I have found to be of much value to me while working among the bees.

Fig. 1 shows the apiary in the height of the honey-flow, with myself and family. In the shade in the left foreground can be seen 4 swarm-catchers, which have been of much value in swarming time. Two of these cages can be seen in Fig. 3, taken on a larger scale.

Fig. 2 shows the apiary just about the time the bees were finishing work in the supers. The colonies are not all shown in this picture, and they are not all shown in Fig. 1, as there were about 100 colonies at the time these pictures were taken.

PREVENTION OF INCREASE.

Fig. 3 represents 2 hives and 2 swarm-cages. The central hive represents a swarm just issuing. The one at the left shows a hive after it has been treated for swarming. At the right can be seen a swarm cage, standing on the open end, with its brace leaning against one corner, and 2 entrance-blocks at the other corner. These entrance-blocks are something like the Dudley blocks without the tube. The reader will notice that this picture was taken out of season, as will be seen in the background a part of a row of bees packed for winter. Therefore I can represent both in one picture. But we will suppose a swarm starting to issue from the central hive. The cage is put on close up to the hive and held in place with the brace as shown in the picture. While the swarm is coming out into the cage take a new hive-body filled with combs or foundation, and put on a bottom-board the size and shape of an escape-board. This board has a solid floor with an entrance at one end 3/8-inch by its full width (see hive at the left.) On top of this new hive-body place an escape-board. Now if the swarm has settled down in the cage, hive it in this new hive. Care must be taken not to leave the cage on the old hive too long, as the bees will go back into the hive. If the swarm

FIG. 1.—WOOLBRIGHT APIARY IN HEIGHT OF HONEY-FLOW

FIG. 2.—WOOLBRIGHT APIARY—BEES WORKING IN SUPERS.

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gets into the cage before the hive is ready, pick the cage up and set it on the open end, as the cage at the right.

Now after the swarm is in the new hive, take an entrance-block and put it on the entrance of the old hive. (See hive at the left.) Turn the little piece of excluder to one side of the ¾-inch hole (which is the entrance) and leave it thus for 9 days. Now remove the supers from the old hive and set them to one side. Then pick up the new hive which has the swarm, and set it on top of the old hive. Now set the supers on top of the escape-board, which is next to the new hive. Then put up the run-way board and fasten it to the bottom-board of the new hive with small wire hooked over nail-heads, which are on the bottom-board and run-way for this purpose. (See hive to left.) In from 24 to 48 hours the escape-board can be removed and the bees will continue work in the supers.

The reason for using the escape is to keep the queen out of the sections, and to force the bees out of the supers into the new hive, so there will be a larger force of bees to draw out the frames of foundation.

At the end of 9 days turn the little piece of queen-excluder around over the entrance of the old hive, as there is danger of a virgin queen leaving the lower entrance, and going in at the upper entrance and causing trouble.

At the right, leaning on the side of the swarm-cage, is an entrance-block, showing queen-cell protector in place, which is also put on over the entrance at the end of 9 days. The excluder will prevent the virgin queens coming out, but will allow the worker-bees to pass. The cell-protector will also allow the workers to pass, never to return to the lower hive, but on returning from the field, heavily laden, must enter the top entrance, as the brood is now all sealed. The bees will all enter the top-hive, as fast as they become fielders. The run-way board is used to obstruct the lower hive-entrance, and to aid the heavily laden bees to gain the upper entrance.

In 21 days the lower hive can be removed and the new hive and its supers can be lowered down on the old bottom-board, and they will work on as if they had never cast a swarm. There will be nothing left in the old hive but combs, with a little honey, a few young bees, and a virgin queen; also some drones, if not liberated.

In the front row of hives in Fig. 1, can be seen 3 colonies treated in the way just described. This is a good plan to use when transferring.

There is another plan of preventing increase, which I have found to be of much value, which is as follows:

When the swarm starts to issue, cage it as stated above, and when it settles down in the cage, pull the cage back from the hive a little so it will be out of the way. Then remove the supers, set them to one side, and remove the brood-frames one at a time, and take out all queen-cells, return the frames, then put the supers back on the hive, then return the swarm. This operation is performed on all colonies as fast as they cast a swarm, throughout the swarming season. These cages have been a great help to me in the swarming season, as I had as high as 18 swarms in one day the past season. Had it not been for these cages there would have been a great mix-up, but by their use everything was in good order at the end of my day's work.

My apiary is run for comb honey. My total crop the past season was about 4000 sections. My customers call at my house, taking almost my entire crop.

Fig. 4 shows the apiary while the snow is on; also my method of wintering. The colonies are set in rows, the hives being about 14 inches apart, and are packed with straw, which is held in place by a sort of rack, and over the top of the straw is placed felt roofing to turn the rain. The packing is about 10 inches thick at the back of the hives. The fronts are left clear so the bees can fly at any time the weather is warm enough.

In the background of Fig. 3, will be seen a closer view of the bees packed for winter. The bees are left in their winter quarters till settled warm weather in the spring, when the racks are piled up out of the way, and the straw removed.

The American Bee Journal is a welcome visitor at our house. Many have been the good lessons which I have learned from its pages.

Elnora, Ind., Jan. 6.

Cost of Beeswax to the Bees

BY C. P. DADANT.

Should the bees be allowed to build the combs? Is there a waste of wax when the hive is supplied with already-built combs for the harvest? These questions, mentioned in the American Bee Journal for February (page 37) have lately been discussed both in this country and in Europe, with entirely different conclusions by different writers. The matter under study can never be positively decided, because of the different conditions in which the production of wax is carried on. Experiments on the cost of wax in pounds of honey have been made, and the amount of honey needed variously estimated at from upwards of 20 pounds down to 2 pounds for each pound of comb. The last-named estimate was given by a foreign writer who has so little practical knowledge of bee-culture that he condemned the use of the honey extractor as altogether impractical. On the other hand, the scientists who tried the experiments of feeding bees and found 20 pounds as needed to produce a pound of wax were doing this in too artificial a manner to secure as good results as must be secured in the height of the honey harvest.

It is evident to me that the amount of honey consumed in producing a pound of wax varies greatly, even in favorable circumstances, just as the amount of corn or cereals needed to produce a pound of fat in our domestic animals varies under different circumstances. This comparison is supported by most scientists. Cheshire compares the conditions necessary to produce wax to those needed by chickens to fatten—confinement, bodily inactivity, warmth, and high nourishment.

But must the bee produce a certain amount of beeswax whether she is willing to do so or not? In other words, must an amount of wax be produced, which if not used to build combs will be

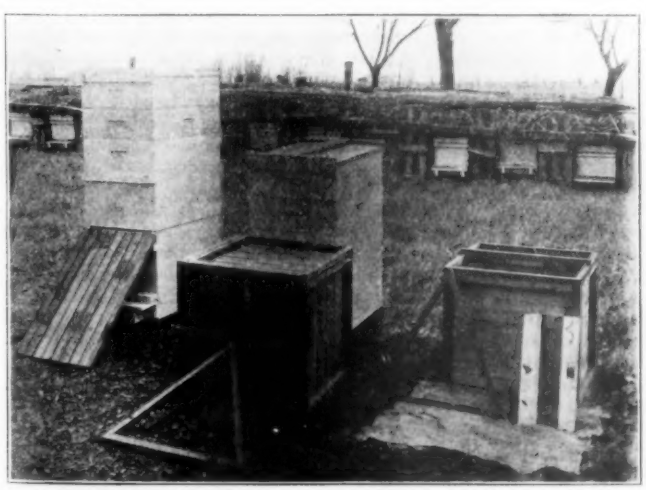

FIG. 3.—WOOLBRIGHT APIARY—TWO HIVES AND TWO SWARM-CAGES

FIG. 4.—WOOLBRIGHT APIARY—WITH SNOW ON HIVES.

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thrown away or plastered over the walls of the hive?

When the bees are filled with honey and have no comb in which to deposit it, there is no doubt that they hang in clusters, "in warmth and inactivity," until this honey is changed into wax. It was once believed that a certain part of the bees were "comb-builders," and that their sole occupation was to build combs; that they differed from the field workers in appearance, being larger in the abdomen and less active than the others. This was asserted by Huber, who, with the help of his faithful Burnens, made such accurate discoveries. But Huber had no means of discovering what was later ascertained by the introduction of the Italian bees, that those bees which he named "comb-builders" are the young bees before their first flight, and that these bees become field-workers in their turn. They are wax-workers when wax-producing is necessary at the time when they are too young to go to the field. But when the combs are full, from one end of the hive to the other, then all the bees must become wax-producers, as there is no other way for them to get rid of their honey.

Huber and others since have ascertained that all the bees are capable of producing wax when their honey-sack is full and cannot be emptied. It is also evident from the testimony of a number of writers that at the time when the adult bee is constantly carrying honey to the hive, the wax-producing organs are more or less active, and a small amount of honey is constantly being changed to wax.

In all my experience with bees, and while producing extracted honey, supplying the bees with supers full of empty combs already built, I have never seen the bees waste wax, except when the combs were full, and there was no more room to build other combs, and no full combs to seal. In one or two instances I have seen wax-scales wasted, but in each of these cases there was room to spare; the waste was caused by a sudden change of temperature, and I ascribed it in each instance to the inability of the bees to keep up the warmth of the hive, the scales of wax becoming too tough to be manipulated and had to be thrown away. Such instances are so rare as to be hardly worthy of notice.

When the honey harvest begins, and there is plenty of empty combs for the bees to store the honey, there is very little wax produced. That which is brought forth is used to lengthen the cells which have been cut down during the winter and spring while consuming the sealed honey, for any of our apiarists know that the cappings are cut away and wasted when the honey is used. So the bees repair their combs and "whiten" them—a process well known to both comb and extracted honey producers at the opening of the crop. Should we consider this whitening of combs as a waste? No, for the wax is placed where it serves the bees, and it is sufficient to say that they always do it, whether they have room for new combs elsewhere or not. But they *always* place honey in the cells, and have them fairly well filled before this whitening goes on.

I have never seen the bees build brace-combs except in too open spaces (in their judgment, evidently,) or waste wax otherwise by plastering it on the walls, as long as they had plenty of empty combs within their reach.

It appears to me that we can very easily reason the bees' action in comb-building. When the crop is light, their stomachs are never crowded. Only for a few minutes at each load does a bee find opportunity or desire to pass into the digestive organs more honey than is absolutely necessary for its sustenance. When it reaches the hive, and hands over its load to a young bee, the latter easily finds a storing place for it. Then there is no inducement for either of them to build comb or to consume honey in comb-building. But when the crop is well on, or sudden; when each adult worker brings home a full load and at once goes back for more, with all the eagerness of a miner who has found a fortune, then all the combs are soon filled. If the apiarist has not provided an extra supply, the young bees, after filling all the cells, have to retain in their honey-sacks as much as they can possibly contain, since the harvest keeps arriving from the field. Then it is that wax-production is not only welcome, but involuntary, for there is no other way of overcoming the difficulty.

Every apiarist who has opened a crowded hive at the time of a sudden and plentiful harvest has noticed how full all the bees look, how sluggish they appear, hanging to each other in festoons, apparently idle, waiting for their honey to change into wax so that they may build more combs. Should there be no room for more combs, the wax would have to be wasted, unless the bees swarmed. This waste will not take place as long as there is a single cell to finish, a corner to fill, a cell to seal. Open a hive in this condition and supply it at once with empty combs and the conditions will change. You will immediately see a new activity. They deposit their honey and rush to the field again. Those that have produced wax-scales utilize them to repair the combs given them, as well as to strengthen these combs.

The evidence of the great cost of combs to bees is visible it seems to me, in the economy with which they build these combs. How light and fragile they are! If wax cost them next to nothing, they would surely build them stronger at first. But it is only when they handle over old combs that wax is added to make them strong—they add a little here and there. Is that wasted wax? Not by any means. If you are a producer of extracted honey, you know how much nicer it is to handle a comb which is several years old, for it is much tougher and less liable to break than the new combs just built.

In my experience, I have found no more waste of wax in the production of extracted honey than in that of comb honey. As long as your bees have room there will be no waste of material, but whenever the combs are full and sealed, and every space crammed, there is a chance for waste of both honey and wax, whether you are producing comb or extracted honey.

That the bees must produce more or less wax during a harvest does not admit of a doubt, but that they must produce enough wax to store all the honey they harvest, and that the supplying of combs already built is a waste, I cannot admit. Far from that, I hold that in locations where the harvest is sudden and very large for only a few days, there is a positive loss in compelling them to build their combs before they store the honey. In countries where the flow is gradual, beginning with a few ounces per day, increasing steadily to a few pounds, the loss from lack of combs is smaller. But when the honey-flow is delayed by unfavorable atmospheric conditions until the blossoms are in profusion and the harvest begins with a rush, there are days when the bees are actually compelled almost entirely to suspend operations in order to secure combs to store their crop. The loss is then threefold. There is the actual cost of the wax in honey consumption; the loss of time to the bees whose abdomens are full and that cannot harvest more until they can unload; and the loss in breeding caused by the filling of all available cells with honey, in the brood-nest as well as the supers.

Some will say that such sudden crops are rare. Not in this part of Illinois. Our crops are sudden and short. We have weighed hives at times to ascertain the amount gathered each day, and we have several times noticed an increase of 18 to 19 pounds in one day. This weighing of colonies is not carried on as persistently on this side of the Atlantic as in Europe. The "Société d'apiculture poure la Suisse Romande" publishes statements every year of weights of hives regularly taken in different locations. Such a statement was published in the December number of their Bulletin, from 23 different localities. Those reports show plainly how sudden crops may be. In some instances crops of 11 pounds are recorded following a day of entire failure. In one instance there is a record of 9, 10 and 11 pounds of increase for 6 or 7 consecutive days. Bear in mind that these large crops are made with extracting supers filled with combs. I doubt very much if such crops would be possible if the bees had to build their combs, no matter how favorable the circumstances might be.

The reader knows that we are almost exclusively producers of extracted honey, but there was a time when we produced comb. I never could secure results at all adequate, when the bees had to build their own combs. At one time we had an apiary of 87 colonies with all supers full and the crop still on. We went to extracting and took off about 5,000 pounds in 3 days; at the end of the third day we examined some of the hives extracted 2 days previous and they did not have a single cell without honey. It would have been utterly impossible for those bees to gather the fifth of that amount if they had had to build the combs. Yet there was no waste of wax, because the bees were not compelled to retain honey long enough in their stomachs to digest it into beeswax. The production of wax was at its minimum, while if they had had to build combs it would have been at its maximum.

I have never heard of more than two

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instances where it was found necessary and advisable to produce wax as much as possible. The first was reported by an apiarist of South America, living away from civilization with very inadequate means of transportation. He could not secure more than about 3 cents per pound for his honey, and found it profitable to have as much as possible of it converted into beeswax, by cutting out the combs and allowing the bees to rebuild. The other is reported by Dr. Phillips on Hawaiian Bee-Culture, "Bureau of Entomology, Bulletin No. 75", a very interesting report concerning the status of apiculture in Hawaii. It appears that the bulk of the honey produced there is from honey-dew of different kinds, but dark and of poor flavor. This is so inferior an article that Dr. Phillips suggests that it may pay to have this honey transformed into beeswax.

But in our case, I believe it pays to economize the wax as much as possible. I do not have very far to find corroborative testimony to support my view. In Gleanings for February 15, 1909, page 102, Mr. Louis Scholl narrates how he accidentally supplied a number of colonies with supers containing starters only, while a similar number of other colonies were supplied with full sheets, and the latter yielded a crop averaging $1.10 per colony more than the others, *after paying the excess of cost of the wax* supplied in the full sheets.

If the beginner will carefully take note of the above explanation and experiment for himself, I think that he will readily ascertain that we run no risk whatever of loss of wax as long as we keep the bees supplied with a sufficient number of combs for storing honey. The wax produced will just about keep pace with the lengthening of the cells to proper size, and the sealing of the honey as it matures.

Hamilton, Ill.

Double-Walled vs. Single-Walled Hives — Wiring Frames

BY WM. M. WHITNEY.

We often hear this objection to the chaff or double-walled hives: "They are not so readily warmed by the sun's rays in the winter and early spring as the single-board hive". The fact is, they are packed, and are kept at an even temperature, if the bees have sufficient supplies, and do not need the additional warmth of the sun; they are not affected so easily by the fluctuations or changes of temperature; not so liable to spring dwindling; breed up stronger in early spring; all of which reasons, it seems to me, commend them to any practical bee-keeper who winters his bees on the summer stand.

Again, the outside case protects the sections from the effects of chilly nights in June which so often happen, and which drive the bees from outside sections in supers on single-board hives thus retarding the work of comb-building which otherwise would have been carried on evenly throughout the entire super of sections.

Again, they are not so heavy or unwieldy to handle as many imagine—they are made of thin stuff, and while larger, are scarcely heavier than a single-board hive.

BEST WAY TO WIRE FRAMES.

In aswering the question which is so frequently asked as to the best method or wiring frames, the same old, antiquated method is often recommended—that of horizontal wiring, which is an absolute failure, so far as accomplishing the object for which wiring is done—foundation buckles just the same. The only successful method is by vertical wiring, or by the use of wood splints as recommended by Dr. Miller. When I see end-pieces to frames come all punched—well, I won't tell you just what I think—it wouldn't sound well.

The objection to staples, as mentioned in "A B C of Bee-Culture," doesn't count at all, even in the Hoffman frame. The slimmest wire brad of sufficient length, driven into the under side of the top bar at the outside edge of the foundation groove and from which, by the use of a pair of round plyers little hooks can be quickly made, and which do not obstruct the insertion of the foundation in the least, is the neatest thing imaginable to loop the end of the wire to; thence, to a corresponding hook in the bottom-bar, but of shorter length, and driven from the under side; thence, zigzagging up and down till about 2-3 of the central portion of the space is occupied—say 5 or 6 wires. With this arrangement, properly done, there will be no buckling of the comb.

Rather than use horizontal wiring, I'd use foundation heavy enough to need no wiring—medium brood. I think it would be all right for standard Langstroth frames. By my method of wiring I have produced, as an experiment, good combs from extra thin super foundation, such as is used in sections. Light brood 10 sheets to the pound, with the above method of wiring, is quite a saving of expense over the use of medium brood of 6 to 7 sheets to the pound.

Evanston, Ill.

Proposed California Apiarian Legislation

BY RALPH BENTON.

In charge of Apiculture, University of California.

On page 107 of the issue of Gleanings in Bee Culture and on page 45 of the American Bee Journal for February, I note discussions of the proposed amendment to the California statute law relative to foul brood and other diseases of bees, now pending in the California legislature. The main trend of these discussions is correct, but there are certain misapprehensions and interpretations that I desire to clear up in the minds of the bee-keeping public.

In the first place, when attempts are made to discuss or interpret the California law, or the amendment in question, it must be borne in mind that our law relates not only to foul brood but to all of the brood-diseases of bees, and also to the diseases of adult bees commonly and collectively called paralysis. Keeping this steadily in mind, let us consider some of the questions raised in the discussion referred to.

First, the statement is made in Gleanings that the amendment provides for a "University Inspector of Foul Brood." This is but a slight error in name, but I desire to correct it for the term so used is misleading. What the amendment does provide for is a State Supervising Inspector of Apiaries who shall be Apiarian Pathologist of the State Agricultural Experiment Station, an institution separate but closely connected with the University. Note that this officer is an "inspector of apiaries" and not simply a foul-brood inspector. This is true of all of our county inspectors under the present law—they are "inspectors of apiaries," and as such inspect and treat for not only foul brood but all of the other maladies of bees. As Apiarian Pathologist the State Supervising Inspector of Apiaries will conduct investigations in the diseases and other enemies of bees, and undoubtedly, ranking an Instructor in Apiculture in the University, it will fall to him to conduct such courses of instruction as are given in the College of Agriculture in the diseases of bees.

Now coming to the main point around which most of the discussion pro and con has centered: I refer to the section relating to the importation of queens into California. There are two things that must be remembered when discussing this section: Firstly, the section in question relates to the importation of queens not only in ordinary mailing cages but also queens in "nuclei" or "swarm boxes;" and, secondly, that the whole law relates in all of its applications not only to foul brood but to all brood-diseases and also to the diseases of adult bees, or paralysis. The exact causes of certain of these diseases is not known, but there seems to be an overwhelming evidence pointing to the fact that those known as pickled brood and paralysis are in some way directly connected in transmission and spread through the queens. Time and again have these diseases been introduced into apiaries previously free from disease through the agency of an importation of queens. Time and again have partial, and in some instances in certain of these diseases a permanent cure, resulted from requeening with fresh and uninfected stock, the apiary so infected.

When I refer to these diseases which in certain portions of the United States do not flourish and in many sections are minor maladies, an adequate appreciation must be had by the bee-keeping public of the virulence and the extent of the ravages of these same diseases as transplanted and permitted to flourish under California climatic and other conditions. In some localities so-called paralysis is much more dreaded than foul brood, and rightly so, if we are to judge from the havoc wrought by this baffling disease. The writer has been in apiaries in which all of the flight bees have been taken off and hive after hive so decimated in numbers that brood-rearing operations were at a standstill for lack of bees and stores to proceed on. In passing down the rows of such

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an apiary, from a pint to two quarts or more of dead bees could be scraped up in a pile in front of each colony, and hardly a place to step without crushing a struggling and diseased bee. If foul brood is an insidious disease, in that it cuts off the supply of young bees, paralysis is just as insidious as far as practical returns are concerned, in that it takes off all the flight or working bees.

So much for the basis upon which the bee-keepers of California have seen fit to include in their proposed law a section relative to the importation of not only bees, but specifically queens as well.

Now a few words in regard to the possible interpretation of the law: The proposed measure is very clear and definite in its statement. There is nothing in it relative to the inspection of queens either at the post-office or at an express-office. There is nothing in it, in fact, binding an immediate inspection of queens upon their arrival by the inspector, unless the inspector so desires to rule. What the section in question does provide is, first, that all queens introduced into the State of California, or from one county into another county within the State, without a clean bill of health, are so introduced at the risk of the consignee. If the consignee does not wish his property endangered, and to make himself liable for the importation of uncertified bees, immediately upon the arrival of such consignment of bees he is required to notify the inspector of apiaries, holding such queens subject to his orders. With the sanction of the inspector the queens may then be introduced into the apiaries of the consignee, and kept under observation for a period of not less than 60 days, at the end of which period, if no disease has developed, the queens may be pronounced free from disease, and then, and only then, lawfully introduced. This in no way debars the sending of queens into California by an Eastern breeder, and as Mr. Root has repeatedly asserted, works no hardship there, as Mr. Pryal anticipated might result to Eastern shippers of queens. And, further, California bee-keepers do not, as Mr. Root anticipates, feel it a hardship at their end of the line, since it is with the California bee-keepers that the proposed measure emanated, and who have been supporting it with an overwhelming majority, quite unanimously, except in a few quarters. As I have repeatedly pointed out, the real burden would lie with the inspectors of apiaries by increasing their duties; but the California bee-keeping public seems willing to increase this line of work in its united effort to restrict and eradicate bee-diseases locally, costing the honey industry annually in the neighborhood of $250,000 to $300,000.

If an aggressive campaign is to be carried on, all possible sources of infection must be guarded, and the great advantage accruing from a system of complete inspection including queens is being able to locate definitely, if possible, the sources of constant re-infection, and concentrate a united effort upon these sources, and so solve the problem, the immensity of which, relatively speaking, few bee-keepers realize. We believe that suppositions or possible interpretations of the law are endless, and in general lead to nothing, and are more of the opinion of Mr. Pryal, that the law framed in the best interest of all should pass, and if in interpretation it is ineffectual it can then be changed and strengthened to suit the situations that may arise in the future.

Berkeley, Cal.

Buzzings From the Clover Field

BY CHAS. M. HIX.

White clover is getting to be the greatest honey-plant in the United States. I believe no other honey-plant yields so much surplus under the same conditions. If a larger kind with the short heads could be produced, the farmer could be persuaded to sow it for hay. Why does not Mr. Burbank attack that problem?

"Wherever a farmer or dairyman or horticulturist can make a living, a bee-man can," says the Modern Farmer and Busy Bee. There is a great deal of truth in that statement, and it gives encouragement to those who are compelled to stay in the location they are in. The best advice to the man who contemplates looking for a new location in another part of the country, is, "Stay where you are."

While bee-keeping is comparatively a new business when compared with the other branches of agriculture, I believe the bee-keepers are the happiest of the lot.

Fully 75 percent of the bee-keepers are photographers. Ought not the other 25 percent to be? Almost every one who can make a success with bees, can be a successful amateur photographer. It does one good to see a bee-yard like that of Mr. W. W. McNeal, on page 7.

A good way to promote the sale of honey near home is to have a public field-day, to which the public is invited, say one day every two weeks. Nothing makes the people want honey so much as when they see the real process of production. But very few people have any idea how much comb and extracted honey is taken from the hives and prepared for market.

Mr. L. W. Benson, page 25, says, "I am not a bee-man," but I wonder if that is not what the neighbors call him. The name is really earned by one who has so much experience, and more—he's not afraid to tell it to others.

Some bee-keepers say it harms bees to move them in mid-winter, but if it is done on a warm, sunny day, it does no harm. I moved a colony of bees in December, 1906, and the next season they were the best in this locality.

While wrapping hives with tar-paper outside the packing may do sometimes, a dry-goods box covered with felt roofing, with packing inside of the box, between it and the hive, is far ahead, and is the cheapest in the long run.

It is not the intelligent farmer-bee-keepers who injure their neighbors, but the wilfully ignorant ones. Those who are successful in other lines, will not generally object to subscribe for a bee-paper.

While the bee-moth is an enemy of bees, I sometimes think we should be thankful for some of its work, because when the larvæ of the beeswax-moth get to work in some box-hive apiary, the owner will begin to "sit up and take notice" of more modern hives.

Why should we use glass in comb-honey shipping-cases? Other food-stuffs are not shipped in glassed cases. Why not just have a few for exhibition in the stores, and the rest plain boxes without glass?

Fellow bee-keepers, let's not prophesy what next year will be, but get ready for a big yield. If we are disappointed, then it will be time to complain. The honey crop for next year is not in our hands, but in the hands of Him "from whom all blessings flow." Although, of course, we can by intelligent labor, make a great difference.

Did you ever notice that bee on the front cover of the "Old Reliable?" Well, in the circle around it are the words, "Our toil doth sweeten others." Why should not this be the motto of the bee-keepers as well as the bees? Let us look up and lift up.

Hampshire, Ill.

Comb Honey and Digestion—Bee-Keeping in New Mexico

BY J. E. JOHNSON.

I have read with much interest the controversy between Dr. Miller and Dr. Bohrer as to whether honey in the comb is injurious to digestion, and whether extracted honey is to be preferred. Probably it is very presumptuous for me to "butt in," especially where two men (and let me add, both good men, and well-informed on scientific things) are crossing swords, but please let me just this once give my views.

Dr. Bohrer claims that the comb honey contains poison deposited there by the bees from their stings, and that extracted honey is free from this. Now, Doctor, what is that poison? Have you analyzed it? The poison from bee-stings that causes our eyes to "button up" when we are stung is not formic acid, but is the toxin, or elements of the decayed or used elements in the bee's body. This substance is not of a volatile nature, and thus the honey does not absorb it, but the element we find in honey that makes it an antiseptic, is formic acid, which is also a product of the bee. Formic acid is very volatile, and as honey has strong chemical attraction for things of gaseous nature,

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the honey attracts the formic acid, and thus the honey absorbs this acid while ripening before it is sealed. Most of this acid is absorbed by the honey from the bees at the entrance when fanning a current of air through the hive to ripen the honey. The acid from their stings is absorbed by that current of air, and is, by the affinity of this honey, absorbed by the honey. The wax has nothing to do with it. Formic acid is poison somewhat of the nature of salt. Salt taken in large quantities is poison, but is beneficial when taken in the right proportion. So is formic acid.

An all-wise Creator provided that the bee should make a perfect sweet in the proper manner, not interfered with by the cunning of man, but the extractor is man's invention, and does not add to the value of the food, but to the convenience of handling the product.

I would much rather produce extracted honey, and here in New Mexico I find that the production of the extracted honey is especially to be preferred, as cool nights hinder comb-making, and I have been very sorry that I did not take all my empty combs with me from Illinois. But I find that here, as elsewhere, the people prefer comb honey. So I say, as I have said before, to all, produce as much extracted as your market will take at a good price, and educate people to use more of the extracted article; but when you have a good demand for comb honey, supply that demand with the finest and cleanest that you can produce. Both comb and extracted honey are good and wholesome, and people should use more of it. That can't be disputed. But to induce people to use more of it, you should supply what they want; but whenever you influence people against either comb or extracted, you hurt the sale of both.

So far I find that our mesquite is our best honey-plant here, better than our alfalfa. Mesquite grows only from about 12 inches to 3 feet high, but I almost had a bad attack of the old-fashioned bee-fever when I found that bees came in loaded with fine nectar from this mesquite for 6 weeks. In fact, it was almost equal to a good white clover flow for 6 weeks. But what gave me the attack of the old-fashioned bee-fever was the fact that I had been able to purchase only one not very strong colony to meet that honey-flow. And what was worse, one day when I was not near, they swarmed, and about 2 barrels of water thrown among that swarm would not convince them that the J. E. Johnson Apiary was the only place on earth for them to locate, and they pulled for the Guadaloupe Mountains 60 miles away. I have never heard from them since, but hope they are enjoying their new home.

However, I built up 3 colonies from what I had left, without any feeding, but got only a little surplus.

I find that alfalfa does fine here, and we cut 4 to 6 times during the season, but the second and third crops are about the best honey-yielding cuttings. I found that alfalfa one year old, in bloom nicely in August, did not attract a single bee, but older alfalfa had a good number of bees working on it.

Here we have little or no rain in April, May and the first half of June, and as alfalfa begins blooming in April, it yields better during those dry months. Not only so, but you can't raise alfalfa seed successfully after the rainy season begins. We call July and August the rainy season, because there are thunder showers within sight of us 3 or 4 days out of every week, and occasionally we get a shower, and sometimes a good, heavy down-pour. But the larger portion of the showers are near the mountains. After these rains begin seed does not form well, neither does the alfalfa yield much honey during those months, so I will have to change my views about Illinois alfalfa yielding honey.

I have alfalfa growing luxuriantly in ditches where water has run 6 to 12 inches deep for two weeks at a stretch. It seems you can hardly drown alfalfa, if it has just its head above water, but if you cover it with water so that the top can't get air, you can drown it, but not very easily. So I would say to Mr. Dadant, you never had it too wet in Illinois for alfalfa. But alfalfa is a high-altitude plant, and I think the high altitude with the very powerful absorbing atmosphere, is necessary for alfalfa to yield nectar well.

You people in the low altitude don't realize how absorbing this atmosphere is. You can bring a brand new wagon from Illinois here in March, and in May every tire will fall off. After the wheels have shrunk and the tires are rusted they are all right. A woman with a long clothesline, as she hangs out her washing, can begin to take clothes in in 15 minutes after hanging them out, beginning at the first end of the line. So conditions are very different here.

I succeeded in raising a fine patch of alfalfa in Illinois, but it did not yield honey. Prof. Hopkins wrote me that as yet he had failed to get a seed crop. So while irrigating does not stop the forming of seed in alfalfa here, rain does. However, alfalfa that is intended to produce seed, is not irrigated as much, but is left pretty dry. Now if during our rainy season we can't produce alfalfa seed and not get much honey from its blossoms, I think you may expect to get honey or a good seed crop only in very dry years, or when it happens to be very dry during blooming time. I find that this mesquite, although it is of very hard wood like hedge, the roots are very large, sometimes 6 inches or more in diameter. The top is only like a bush, but it belongs to the legum or clover family, and thus it is related to alfalfa, and the soil has bacteria that work on alfalfa roots and alfalfa does well, because the same bacteria work on the roots of both.

We have lots of flowers growing wild all summer, and especially in the fall and late summer. I can not name them very well. Fruit-bloom is of 3 or 4 weeks' duration — apricots, peaches, pears, plums, and apples of large orchards, from 100 to 200 acres; and as mesquite comes at the close of the apple-bloom, I consider it the most valuable as yet. There are hundreds of acres of mesquite, but as the country improves, the mesquite will grow less and alfalfa more. So far mesquite is old, and the greater part of the orchards and alfalfa is young. I think alfalfa improves in yielding honey, as it grows older.

The ground does not freeze in winter, but vegetation stops growing. There is a little ice occasionally in the mornings. Bees fly nearly every day all winter, but as yet have consumed very little honey. The winters are dry, and bees winter fine.

This is the greatest place for automobiles I ever saw. The roads are always fine and often dusty. There is a livery barn that has no horses—just automobiles. I have not yet been to the mountains. The Guadaloupe (pronounced Waluppe here) Mountains are 60 miles away, where there is much timber, some trees being 3 to 4 feet in diameter. I have no doubt there are some bee-trees there. New Mexico is an old settled country. The house in Sante Fe in which Gov. Curry lives, was built in 1605, and is still in a good state of preservation. Many years ago when Gen. Lew Wallace was Governor of New Mexico, he lived in this house and wrote "Ben Hur." The writing of "Ben Hur" was the means of the writer's conversion from a disbeliever to a Christian. Just think of a house still in good use that was built 2 years before the Jamestown, Va., colony was established! We hope to get State-hood soon.

I shall get more bees this spring.

Dayton, N. Mex.

Foul Brood—How to Treat It

BY M. M. BALDRIDGE.

Manager N. E. France has sent me a copy of the proceedings of the National Bee-Keepers' Convention held in Detroit, in October last. On page 72, I find the following in regard to foul brood, credited to R. L. Taylor:

"If your colonies are strong there is a way to get rid of foul brood without much danger, and, I think, with perfect safety so far as the new colony is concerned, and that is Baldridge's plan of using a bee-escape. You prepare a hive for your colony with starters or foundation, and place it upon the stand of the colony that has the foul brood, setting that one a little aside, putting the entrances as nearly together as possible; then take into the new hive with the queen, to make a start, sufficient bees to take care of the queen at least and then put up a bee-escape upon the front of your hive, having it in every other way perfectly bee-tight. Then you have nothing more to do but to let the bees come out of themselves through the escape, and if you place the escape properly they cannot return to the foul-broody colony, but will go into the new hive. Mr. Balridge uses that plan, and says it is always successful. I have used it in several instances, and have found it successful."

The foregoing, I suppose is word for word as reported by the stenographer, and may not be exactly as Mr. Taylor gave the plan, or desired to give it. This is why I stated in the beginning that the plan is credited to Mr. Taylor. I am pleased to learn that Mr. Taylor found the plan he describes successful in treating foul brood, but I would not be willing to advise any one to treat the disease exactly in that way. I never take the queen and some of the bees away from the foul-broody colony to start the new colony, and I see no necesity of doing so in any case. I prefer to start the new colony by taking a

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comb of brood with the adhering bees from a *healthy* colony , and giving them the queen from the diseased colony in one or two days thereafter. I want the queen to remain in the diseased colony, caged, and the cage placed on top of the frames where she can be got at with the least trouble, so as to be given to the new colony at the proper time. I want the queen to remain as stated so the bees therein will not become excited as when they find themselves queenless. If the new colony is started in the forenoon, or when the bees are busy at work, a good time to remove the queen and let her run in at the entrance of this colony is on the following day, and near sundown. I also prefer to face both colonies in opposite directions. That is, set the prepared hive on the foul-broody stand with the entrance the same way, turn the diseased colony halfway around, and leave the entrance open.

I do not find it necessary to use the bee-escape at all when treating a number of colonies, except in the final wind-up. The bee-escape is of minor importance in treating foul brood by my plan. The main thing is to compel the bees in the diseased hive to transfer themselves to the new hive without taking with them any diseased honey. They will do this by manipulating, as I have stated. Several diseased colonies, if they exist in the apiary, may be treated in the same way and at the same time. Then in the course of a week or 10 days the diseased colonies may be consolidated by piling them up 2, 3, 4, 5 or more stories deep. Then by using a bee-escape in front of the bottom story, and locating the combination by the side of a weak colony, when they go out for any purpose, they will be forced to go into the other colony.

There are divers ways to manipulate the diseased colonies, but it is unnecessary for me to describe them all. The getting rid of foul brood by my plan is so simple that almost any one can treat the disease successfully.

I wish the reader would try my plan and then report. If you wish more light on this topic than is outlined in the foregoing, please read my directions more in detail on page 205 of the July issue of the American Bee Journal for 1908.

St. Charles, Ill.

[In order that our readers may have Mr. Baldridge's plan of treating foul brood right at hand, we have decided to reproduce it once more, as follows: —EDITOR.]

BALDRIDGE PLAN OF TREATING FOUL BROOD.

The Baldridge plan of treating a foul-broody colony successfully is as follows:

1st. Open the hive of the diseased colony and cage the queen. The best time to do this is late in the afternoon or near sunset. Place the caged queen in the top of the foul-broody hive, and where the cage can be got at with as little trouble as possible.

2d. Bore a small hole—about one inch in diameter—in the front end of the foul-broody hive a few inches above the regular entrance, and fasten over it on the outside of the hive a Porter bee-escape. After the bees are through flying for the day turn the foul-broody hive half way around so the bee-entrance will face the opposite direction.

3d. Now go to some healthy colony and select one or two combs of brood well covered with bees, and place them in an empty hive and fill this hive with empty combs, frames of comb foundation, or empty frames, and set this hive on the stand of the diseased colony. The rear ends of both hives will now touch each other, or they may be a few inches apart. Now leave the hive thus, for say 2, 3 or 4 days, or long enough for the outdoor workers in the foul-broody colony to return to their old location. This they will do, of course, and they will then remain in the new hive, having one or two combs of healthy brood.

4th. Near sunset of the second or third day take the caged queen away from the diseased colony and simply let her run into the entrance of the new hive.

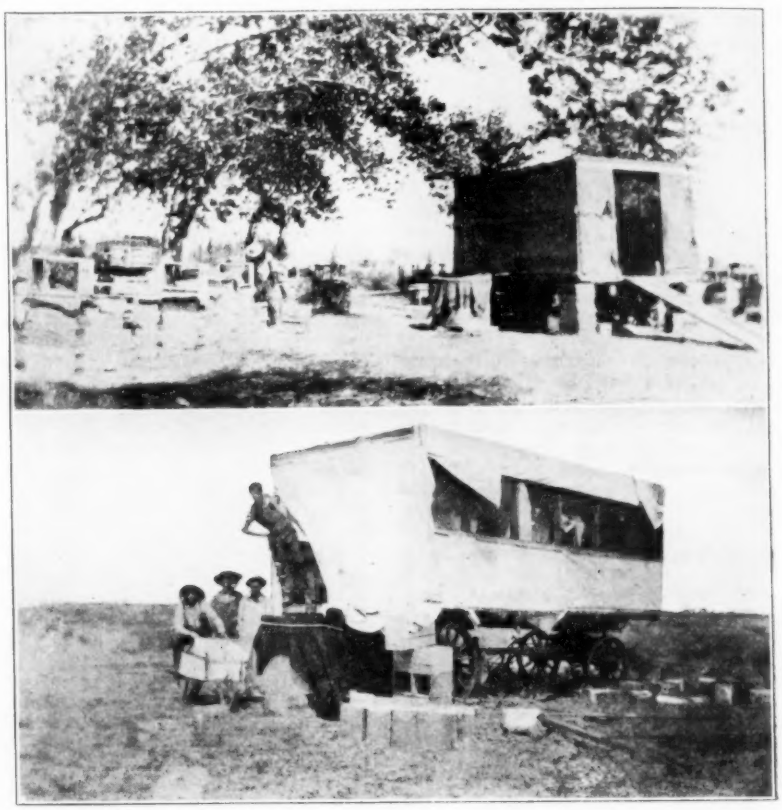
5th. Now close the regular entrance of the foul-broody hive and all other exits except the one through the bee-escape. Then gently place this hive by the side of the new hive and close to each other, the closer the better, with both fronts facing the same way. Thereafter the bees that hatch or fly out of the diseased colony must pass through or out of the bee-escape, and as they can not return they must and will go into the new hive. By this means the new hive, in the course of 3 or 4 weeks, will secure all, or nearly all, the bees and brood that were in the diseased colony, and during this time, or for any length of time thereafter, no robber-bees can gain entrance there and carry away any diseased honey.

This plan of treating foul-broody colonies prevents all loss in bees, honey, or the building of new combs, and is a simple and practical way of treating the disease. In some respects the plan is a far better one than any other I have seen described.

My plan may be carried out in divers ways, but it is not always best to describe such and thereby confuse the reader. The entire plan is based upon the well-known fact that foul brood is a *germ* disease, and that the germs may be taken into a new hive by the bees filling their bodies with the diseased honey deposited in the foul-broody hive. The disease may likewise be taken into the new hive by the *nurse-bees*. My plan does away with all such danger, for when the diseased colony is left undisturbed over night the bees re-deposit all their honey, and on going out to work the following day they go out with empty bodies and return with healthy honey. All the *nurse-bees* will remain in the diseased colony, and before they pass out of their hive through the bee-escape all germs in their bodies will have been disposed of in nursing the uncapped brood in the foul-broody colony.

My plan of treating foul brood is not exactly a new plan, as it was outlined by me in 1897, page 333, in the Bee-Keepers' Review. Since that date I have treated a number of foul-broody colonies by my plan, and always with good success. I am advised that others have done likewise.

M. M. BALDRIDGE.



UPPER FIG.—HONEY-HOUSE OF C. I. GRAHAM, SET UP FOR OPERATION.
LOWER FIG.—HONEY-HOUSE OF H. T. CHRISMAN, AND EXTRACTING CREW.

Honey-Houses in California

BY CHAS. TROUT.

It is by the means of the movable honey-house that our specialists extract such enormous amounts of honey. I will describe 2 of the most successful houses I have seen:

The upper figure is the extracting house of Mr. C. I. Graham. It contains 2 4-frame extractors, and 2 capping tanks. The honey runs direct from the extractor through pipes to the tank on the outside. The house is built on the bed of a strong wagon, with burlap sides and tar-paper roof. It can be drawn easily by 2 mules from yard to yard.

The lower figure shows the crew and extracting house owned by H. T. and J. Chrisman. This house is quite different than Mr. Graham's. A space only 5 feet by the width of the wagon is used for extracting purposes. It contains only one extractor and uncapping

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tank. The honey is lifted into the house instead of carrying it on wheelbarrows. The remainder of the house is used as a dining room by the men and a bedroom by the owner and wife, and is partioned off from the rest. It has screen halfway down each side and canvas flaps, which enable the operators to have plenty of ventilation.

The illustrations show many other conveniences

Redlands, Calif.

Sweet Clover as a Honey-Producer

BY ISAAC F. TILLINGHAST.

During the past season I have been traveling quite extensively through several different states, visiting bee-keepers, and noting the comparative results, under different kinds of management, and in different locations.

One fact forcibly brought to my attention by this inspection of localities was that the most profitable apiaries I found were in sections where large quantities of sweet clover were found growing in vacant lots, along railroad embankments, and in fact wherever it had been able to gain a foothold.

So striking and remarkable were the results in some of these cases that I became convinced that this plant is really one of the most valuable sources of honey that we have in this country, and in order to try and profit by the discovery, I procured 100 pounds of the seed which I have been quietly scattering in every possible nook and corner within a mile or two of my apiary.

I think that the chief value of this plant, over many others, lies in the fact that it continues in bloom for so long a time that it bridges over the periods of dearth between our natural supplies, and furnishes a great amount of nectar when the bees otherwise would have nothing whatever to keep them busy.

And again, unlike buckwheat, and some others, which seem to supply only during the early part of each day, sweet clover will be found covered with bees from early dawn till dusk, day after day, from July to September.

One peculiar thing about sweet clover is that it will grow rampantly in new railroad cuts and embankments, consisting of sand and gravel, or rock and hardpan, which contains no humus or soil of any richness which would support any other kind of plant, and as it has the property, like other clovers, of gathering nitrogen and feeding it to the soil in which it grows, it is no doubt one of the greatest soil-improvers in existence, and well worthy of a place on every farm for this purpose alone.

I have a five-acre field of old worn-out farm land which I am seeding to this plant which will be allowed to remain undisturbed for several years for the double purpose of improving its fertility and at the same time supplying bee-pasturage.

The Mohawk valley, in New York State, through which runs the New York Central, the West Shore, and various trolley lines of railroad, as well as the canal, has many pieces of company land lying between these thoroughfares, which through disuse have become seeded with sweet clover, both white and yellow, making an aggregate of hundreds of acres between Albany and Syracuse, and I found that bee-keepers in this belt were invariably securing larger returns from their apiaries than any in sections not covered with this plant.

Right in the city of Syracuse are a number of large apiaries which are making almost phenomenal records which I attribute almost entirely to sweet clover which is scattered all around the city on vacant lots, parks and street ways. One instance I may mention was the case of Mr. F. A. Salisbury, who showed me hives from which he stated he had taken an average of 266 pounds of box honey during the past season.

I think that the same condition exists in some of the suburbs of Chicago, and if so I am led to ask why we do not hear more about the value of this plant? Is it because those who have it and know its great value wish to keep "mum" and profit by their knowledge rather than publish it to the world?

I, for one, shall be pleased to hear from any person who is in position to say anything either for or against it.

Factoryville, Pa.

Comments On Several Topics

BY HARRY LATHROP.

My bee-keeping life has been spent entirely in the great white clover belt of Southern Wisconsin, and of course I look at bee-keeping from a different point of view from some whose fields and resources are far different.

My advantages are an unlimited field during good seasons, a grade of honey that is the standard for the whole world, and record yields during good seasons. My disadvantages are crop failures, owing to the occasional failure of the white clover crop, and a climate in which it is necessary to house or otherwise protect bees in winter. These two objections have, I believe, prevented a great many from going into the business of bee-keeping in this part of the country.

It requires years of study to be able to contend with the conditions, and work bees here at a minimum of expense and obtain the maximum of yield.

I have two yards at present—one on a strictly clover location, and the other here on the Wisconsin river where there is the chance of an occasional crop of very nice fall honey.

This year (1908) after the white honey was all through, I secured 2000 pounds of buckwheat, golden-rod blend that is about as nice as any good maple syrup for pan-cakes. I always ask the same price for such honey that I do for the best white clover and basswood, as there are some who prefer it. I also find that the amber honey of this region makes good winter stores, being, as a rule, well ripened by the close of the season.

Late Extracting of Honey.

The dark honey mentioned above was not removed from the hives until it was too late to extract without artificial heat. I have a small building that I use as an extracting room. I would carry in enough combs for an evening's work, start a fire in a cheap sheet-iron stove of the air-tight variety, and by 8 o'clock, when I am through with my other work, the honey would be nicely warmed through. I would then extract, sometimes as late as midnight. I have had no trouble to extract honey even in winter by using proper heat, but I would not want to depend upon any sort of an oil-stove. I use a capping melter run with a common gasoline jet, and it does the work in such a satisfactory manner that I will probably never go back to the fussy plan of keeping a lot of cappings on hand to drain out and take up room until rendered by the usual process.

Rendering Combs Into Beeswax.

I never learned anything about wax-rendering until the last year. My wife always made the wax on an old cook-stove, using a common wash-boiler. I think she got at least two-thirds of the wax, and the balance was lost. But we live to learn, and so one day I shut myself up in the little shop and melted up a lot of combs and scraps, using my new Hatch-Gemmill press. Now I know how to render and get it all, except, perhaps, a very small percent. It is not hard to learn. You want a warm room, plenty of hot water, and some nice, loose-woven burlaps for making the cheese in. However, I have not yet learned how to refine wax so as to get large cakes of the pure stuff. I suppose the comb foundation makers have very good facilities for this purpose, and I have been sending them some of my wax in the rough and letting them refine it. It is a safe thing to do when you are dealing with such honest, faithful men as we have in that line of business.

I would like to see an article on refining wax, by some one who has the thing down to a fine point. I think probably Mr. C. A. Hatch could make the matter clear, and no doubt there are many who would like to have his instructions. If I were to make a guess at what would be a good method, I would say, re-heat the wax that comes from the press or from the solar extractor, in deep cans or pails; allow it to stand quietly in a melted condition, and dip off the top into clean moulds. Put in more unrefined wax, heat up and dip again. Am I correct?

My bees went into winter quarters much heavier in stores than last year. The few light ones were set to one side in the cellars and I will place on them supers containing some No. 2 section honey. That is about all the use I have for sections.

Retail Prices for Honey—A Rap at Glucose.

At one time I made a specialty of fancy comb honey, but of late I always think it is produced only at a loss here. The trouble is that the price of comb honey is down so near what I can get for good extracted honey in pails that it doesn't pay to bother with it. My principal package is the 10-pound pail, which I sell at one dollar, and "Jones," or whoever else buys the honey, "pays the freight." My wholesale price for

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honey in 60-pound cans is 8 cents, and I get it, too.

Now if all bee-keepers would demand these prices, which are very reasonable, they could get them. At present the large dealers and cracker factories are offering only 5 cents for honey. But after all, the great enemy of our industry is glucose. Go into any country or village store, and you will probably find a small amount of honey on sale, and as much as a dray load of pails containing the so-called corn syrup. My friends, are you aware that this stuff is not fit to eat? Then what are you doing to educate your people in reference to sweets for the table? I tell my people it is all right to use pure sugar syrups if they prefer them, and I think that only such should be allowed on the market. If we could handicap glucose as manufactured butter was handicapped by the dairy-men, you would see a different state of affairs in the honey-trade.

It is not appetite but greed that causes such an immense sale of glucose syrup for table use. The men who make it are actuated only by greed of gain. I have talked with several people who have worked in glucose factories and they each and all say that they would not think of eating the stuff. Some of these are good honey customers. Cheap boarding houses use it, again from motives of greed, and last, but not least, farmers who have hired hands to feed. Well, there are some farmers in this part of the country who would not carry such stuff into their houses, and among this class I have my best honey customers. A man who puts honey on the table for his hired help will lose nothing by so doing. They will appreciate his desire to give them good food, and work all the better to his interest.

On the other hand, there is nothing that will more quickly advertise the cheap, second-class quality of a public house than the use of glucose on the table in the place of honey or pure syrups.

Bridgeport, Wis., Dec. 12, 1908.

The Care of Extracted Honey

BY DR. E. F. PHILLIPS

In charge of Apiculture, Bureau of Entomology, Department of Agriculture, Washington, D. C.

I was recently asked by the officers of the National Association to prepare a paper for this meeting. However, owing to the shortness of the time after the request came, I was unable to prepare a new paper, but agreed to read a part of a paper which I had prepared for publication on the production and care of extracted honey. I shall omit the first part of this paper which deals with the production, and shall read only the portion pertaining to the care of the honey after extraction. The entire paper will be published soon as a part of one of the bulletins of the Bureau of Entomology.

The Ripening of Honey.

When nectar is gathered from flowers by the worker-bees, the amount of water contained in it is very high. It is generally supposed that, by the time bees reach the hive to deposit the nectar in the cells, part of this water has been removed; at any rate, during the process of ripening, the amount of water is very much reduced, until, in thoroughly ripened honey, it will not exceed 25 percent and is generally not more than 20 percent. Some very ripe honeys will have as little as 12 percent of water in them. If more than 25 percent of water remains in the honey at the time of extraction, it will probably ferment.

The ripening of honey consists not only of the evaporation of the surplus water of the nectar, but especially of the transformation of the sugars of the nectar into the levulose and dextrose of honey. Unripe honeys contain a larger proportion of sucrose or cane-sugar, and it is probable that the longer the honey remains in the hive the less of sucrose will be found in it. While honeys vary all the way from zero to 8 or 10 percent in their sucrose content, the purest honeys are those which contain the least. The official honey standard of the Association of Official Agricultural Chemists allows 8 percent of sucrose in honey.

It is the policy of most bee-keepers to allow this ripening to take place in the hive by waiting until the honey is almost all or entirely capped, and this is undoubtedly the preferable method. It is a matter of common observation that honey which remains in the hive for a long time has a better "body" and has more of the characteristic honey aroma. By ripening in the hive, honey gets its characteristic flavor to a greater extent than is possible in evaporation outside of the hive.

There have been several machines devised for the artificial ripening of honey which has been extracted "green," that is, with too great a water content. The principle on which all of these are constructed is the application of heat, not to exceed 160 degrees F., for a sufficient time to reduce the amount of water present to about 20 percent. Either sun heat or artificial heat may be used. In the western part of the United States honey may be, and usually is, extracted before it is all capped, because it is the general practice of bee-keepers to run the honey directly from the extractor to large tanks, sometimes holding several tons, out in the open, covered with porous cloth tightly tied down to exclude bees. Many of these tanks are contracted at the top, leaving only a comparatively small opening. On account of the extreme dryness of the atmosphere and total lack of rain during the dry season, this partial evaporation outside of the hive takes place very rapidly.

The advocates of ripening outside of the hive argue that, if honey is extracted before all the water is removed from it, the bees have less to do inside of the hive and can devote almost all of their time to gathering nectar in the field. This obviously would result in an increased amount of nectar, and, consequently, provided the forage will produce it, in an increased amount of honey. They argue that it is impossible to detect any difference between honey ripened inside of the hive and that ripened outside, as far as flavor is concerned, but this is a point on which many other bee-keepers and experts in honey-tasting do not agree with them. It must be admitted that, for general sale, the delicate aromas of well-ripened honey are not necessary, since the purchasing public is, as a rule, not educated on this point; but it certainly pays to produce the very best article possible for the further education of the trade, and, therefore, a thorough ripening inside of the hive is very much preferable. To insure this, it is better to tier up the hives rather than extract as soon as a hive-body is full.

On all honeys, after extraction, if allowed to stand in a vessel, a scum will rise to the top, made up of impurities, such as wax, brood, dead bees, and particles of dirt which may get into it. This is particularly the case with honeys which are extracted when not thoroughly ripened. In all cases honey should be strained as it leaves the extractor and subsequently skimmed until no further impurities come to the top. It is frequently the practice to draw honey from the bottom of the tank in which the honey is stored, through a "honey-gate," so that the impurities do not get into the smaller receptacles in which the honey is to be packed.

The thorough ripening of honey cannot be too strongly recommended. Honey attracts moisture, and there is always a tendency for a very thin layer to form on the top of the honey in which the water content is very high. In such a film the amount of sugar is low, the acetic-acid-forming bacteria can grow rapidly and the honey becomes sour. In thoroughly ripened honey, it is very probable that a film of thinner honey is always present, but, in such a case, the sugar content is so high that the bacteria cannot grow.

It is desirable that honeys from different sources be kept separate as far as possible if the product is to be used for the bottling trade. This can be done only by extracting at the close of each honey-flow. While it is probably impossible to get a honey from only one species of plant, except under the most abnormal circumstances, at the same time honey may generally be removed at the close of each flow so that the total quantity will have the characteristic flavor imparted by a single kind of flower.

The Granulation of Honey.

Almost all honeys granulate or "candy" after a certain time, and may become solid. This phenomenon varies greatly in different honeys. For example, alfalfa honey produced in Colorado will often granulate solid within a few weeks from the time it is extracted; while the white sage honey of southern California will often remain liquid and entirely clear of crystal for two years and often longer, if properly put up. The reason for this difference in the time of granulation will be discussed under the heading of "Types of Honey." Honey from the same species of plant varies somewhat in different localities.

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Formerly the general public was suspicious of granulated honey, in the belief that it contained cane-sugar, but, fortunately, it is now generally understood that pure honeys will granulate in time, and this crystallization is generally considered as a test of purity. The education of the purchasing public has so far progressed that now some bee-keepers prefer to sell their honey in a solid granulated condition, it being cut up into bricks and wrapped in oil paper.

In bottling honey, or putting honey from any large receptacle into smaller ones, it is necessary to liquify the entire quantity completely before the operation is begun. This may be done by immersing the receptacle in water which has been heated to 160 degrees to 170 degrees, F., and letting it remain until the honey is all liquid and free from crystals. Honey should never be liquefied by direct application of heat, and it is extremely important that it should not reach a temperature of more than 160 degrees, F. It is well-known to almost all bee-keepers that honey heated to higher temperatures will become darker in color and lose flavor, and, consequently, they are generally very careful on this point. There is, however, a very much more important reason for avoiding high temperatures. When honey is heated to 180 degrees, F., and more, the higher alcohols which give honey its aroma are driven off, and, more than that, a decomposition of certain of the sugars takes place; this is what gives the darker color to the honey. Of all the various substances used for the adulteration of honey the one most nearly resembling pure honey is invert sugar, of which the Herzfelt artificial honey is the best illustration; in the detection of adulteration, one of the tests for the addition of invert sugar is based on the presence of decomposition products due to heat. These decomposition products in invert sugar are probably identical with the decomposition products in overheated honey; at any rate, honey which has been heated to more than 180 degrees F. for any considerable time, gives the test for invert sugar and would, therefore, be declared to be adulterated if this test were applied by a chemist. A bee-keeper might argue that he is not infringing on the pure food law in over-heating his honey, since he had added nothing in the way of an adulterant. If, however, he changes the chemical composition of his honey by injudicious treatment, it is no longer pure honey, and he has no right to sell it under that name.

It is very much safer to liquify honey at a temperature of about 140 degrees, F., and thus avoid any danger of decomposition. If this lower temperature is used, it is, of course, necessary to keep the honey at this temperature for a considerable time; but the safety of such a proceeding makes the extra time well worth while.

Two or three of the most widely circulated American text-books on bee-keeping advocate the drawing off of the liquid portion of granulated honey, particularly in the case of honey which was not thoroughly ripened before it was extracted. The granulated portion is then allowed to liquefy and is recommended as a very fine quality of honey. This practice is in no way permissible, as will readily be seen if the composition of honey is studied. Honey is made up of dextrose and levulose in about equal quantities, sucrose, a certain amount of ash, and water. In granulation, the dextrose crystalizes readily, and the levulose probably does not granulate at all. If then, the liquid portion, consisting largely of levulose, sucrose and water, is removed by draining or by pressure, the resulting portion is not honey but dextrose. However fine the flavor of such a compound may be it is not honey, and cannot truthfully be sold as such.

Since honey separates into its component parts in granulation, it is very necessary that *all* the honey in the receptacle be liquefied and thoroughly mixed before any portion is removed from it for bottling or canning. If, for example, honey is in a 60-pound can, and is to be transferred to pound bottles, it is necessary that the entire 60 pounds be liquefied and mixed before any is poured out into bottles, in order that all the bottles may contain honey according to the legal standard. Unless this is done, some of the bottles will contain a high percentage of dextrose and will granulate rapidly; while others will contain a preponderance of levulose and will not granulate for a long time. Unless this mixing is done thoroughly, none of the bottles will contain absolutely pure honey. In order to protect himself, the bee-keeper must be very careful on this point. Some bee-keepers prefer to pour the honey cold into the bottles and heat it afterward before sealing. As a matter of convenience this has many points in its favor, but, in view of the separation into component parts which may take place, it is a bad practice. The honey should first be heated and liquefied completely, especially if honeys from several species of flowers are to be blended.

As previously stated, there has existed, and possibly still exists, a popular idea that granulation indicates adulteration by the addition of cane-sugar. This is, of course, untrue, since pure honeys do granulate solid. Many bee-keepers in combating this idea have stated that this very granulation is a test of the purity of the honey. This statement, so frequently made, is equally untrue, since invert sugar—one of the adulterants sometimes used—will also crystalize solid as rapidly as do most honeys. Bee-keepers should not make such statements to their customers since it may reflect on the purity of their goods if the truth is found out.

Age seems to affect honey greatly. Repeated granulation and liquefaction as the temperature varies year after year in some way affects the chemical composition of the honey, changing the product so that it may not have the composition that it had at first. Some honey 35 years old, submitted to this Department, was found to contain too much sucrose. A sample of the same honey had previously been analyzed by two official chemists and declared to be adulterated; but the history of the sample precluded this possibility. The honey had apparently changed greatly with age in appearance as well as in composition.

Some bee-keepers make a practise of adding a very small amount of glycerin to the honey to prevent granulation. This should not be done, for it is adulterating the honey. Some have argued that, since glycerin costs so much more than honey, they are not adulterating in that they are not adding something cheaper to the honey to increase their profit. According to pure food laws, however, nothing can be added to honey, unless the addition is specifically stated, and the addition of even a small amount of glycerin is, in the eyes of the law, as great an offense as the addition of glucose.

Heating Honey for the Destruction of the Bacteria of Disease.

The only condition under which honey should be heated to a higher temperature than 160 degrees F. is in the case of honey which has been extracted from a colony containing foul brood. In order to kill the bacteria of either of the brood-diseases, it is desirable to dilute the honey by adding an equal amount of water and then raising the temperature to the boiling point and keeping it there, allowing the mixture to boil vigorously for at least 30 minutes; in order that no risk may be run, it is better to make this one hour. Honey which is so treated is changed chemically and is no longer pure honey, but it makes a good syrup for feeding to bees and is the best way of using honey from an infected source. Too much care cannot be exercised in bringing this to the proper temperature, but it must be remembered that the resulting product is not honey but a syrup, the chemical composition of which is quite unlike that of pure honey.

Packing of Extracted Honey.

If honey tends to granulate rapidly, it will save much trouble in liquefying to put it into the receptacle in which it is to be sold as soon after extraction as possible. There will then be no difficulty from the various ingredients becoming separated. To preserve the delicate aromas it is desirable that honey be sealed as soon as possible.

When honey is put up in less than 3-pound packages it is generally bottled. A bottle makes a much more attractive package than a tin can and shows off the contents. There is no doubt of the fact that honey sells largely on its appearance, and too much care can not be exercised in packing and labeling so as to make the package attractive to the purchaser. In cases where a bee-keeper sells directly to a local trade he may educate his customers to judge his honeys by their flavor, in which event it is immaterial what kind of a package is used, and honey may even be run out from a large can into a vessel furnished by the customer, when the honey is delivered. It is too often the case, however, that bee-keepers put up their honey in such poor, unsightly packages that they can get only a low price for their goods.

If honey is put up in more than 3-pound packages, tin cans are generally

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used, and the most common receptacle is a square can holding 5 gallons (60 pounds). Two of these are usually boxed together for shipment. Square and round cans of various types are often used for smaller quantities. Barrels are preferred by some for large shipments for the baking and confectionery trade, but their use can not always be advised. Before honey is put into it, a barrel must be thoroughly dry, and *tight when dry*, because of the fact that honey takes up a certain amount of moisture, and if, when the honey is put into it, the barrel is damp, the honey will absorb the moisture, causing the barrel to leak. Barrels also absorb a certain amount of honey. In dry climates, particularly, barrels should be used with caution.

When honey is packed in bottles it is desirable that granulation be retarded, since a partially granulated bottle is not attractive. To aid in the retarding of granulation the honey should be entirely liquefied, thoroughly mixed in a large can, and run into the bottle *warm*. The bottle should be as full as possible and sealed hermetically while still warm. Granulation usually begins on the edges of the top line of the honey, and spreads rapidly from these points; this is probably because some honey gets upon the sides, and partially dries. It is, therefore, desirable that the honey fill the bottle clear to the cover to prevent this. It must also be free of bubbles.

Bottles may be hermetically sealed by using some style of clamp cover or by sealing a cork with a mixture of beeswax and resin. This mixture may be colored by the addition of a dye. Granulation may be considerably retarded by keeping the honey at a nearly uniform temperature. This should not be less than 65 degrees, F., and is much better at 90 degrees to 100 degrees, F. While the honey is in the hands of the producer or bottler it may be kept liquid for a long time in this way, but, of course, when cold it is generally subject to changes of temperature. Honey, either comb or extracted, should never be kept in a cool or damp place.

The Production of "Candied" Honey.

Honeys of average type are relatively free from non-sugars, such as that made from alfalfa, soon granulate solid and are sometimes sold in bricks. Granulation may be hastened by changes of temperature and by stirring. If it is desired to have a can of honey granulate rapidly, it may be carried from a warm room out doors in winter and back again at intervals of a day or two for a couple of weeks. If this is accomplished with occasional stirring when granulation first begins, the whole can will soon be a solid cake. Honey may also be poured into smaller receptacles such as waterproof pasteboard carriers or oyster pails, and allowed to crystallize in the package in which it is to be sold. If allowed to granulate solid in a large tin can the tin may be cut away and the honey cut into bricks with fine wire in the way that prints of butter are sometimes prepared.

A market for "honey-bricks" must generally be built up locally, for as yet the general public has not learned to look for honey in such shape. The cost of the package is less than that of bottles, and the granulated honey is by some considered as superior for table use to liquid honey. Several bee-keepers have used this method with success, and claim that it gives great satisfaction to their customers.

Honey Types.

It is well known that honeys from different plants vary considerably in taste, color, granulation, etc. The taste and color are given to honey by the plants from which the nectar is derived. Granulation may be considered as a property of all honeys, or, rather, of the dextrose contained in all of them, and, from a study of the chemical composition of many specimens, it seems probable that all honeys would crystallize were it not for the fact that some of them contain an excess of either non-crystallizable levulose or dextrose gums, and other non-sugars. The following table will make this point clear:

I. Normal Honey (from nectaries of flowers.)

1. High Purity (high in sugars, relatively low in dextrine gums, and other non-sugars.)

a. Levulose type, e. g., mangrove, tupelo, sage.

b. Average type: a. High in sucrose; e. g.; alfalfa. b. Low in sucrose; e. g.; buckwheat.

2. Low Purity (relatively high in dextrin, gums and other non-sugars; e. g.; basswood, sumac, poplar, oak, hickory, apple—most tree honey).

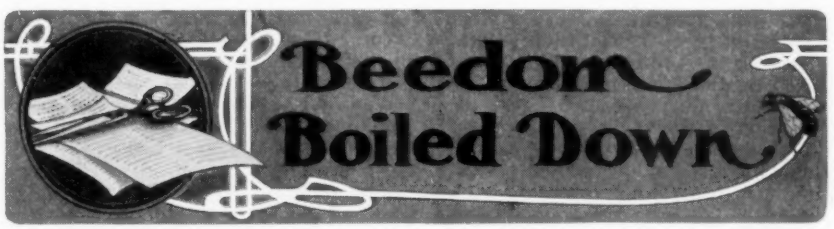
II. Abnormal Honey (not from nectaries of flowers) (generally high in dextrin, gums and other non-sugars).

1. Honey-dew Honey (from aphides and other insects.)

2. Coniferous Honey (plant exudations not from nectaries).

Honeys containing approximately the same amount of levulose and dextrose, and which are high in sugars (average type) granulate readily. Very few honeys have more dextrose than levulose. If, however, the levulose is considerably greater than the dextrose (Levulose type) or if the non-sugars are relatively high (Low Purity and Abnormal Honeys) granulation is retarded. Some honey-dew granulates rapidly, but no abnormal honeys of that type were included in the samples examined, and consequently they are not included in the table.

The use of the terms "high" and "low" purity in this table must not be taken to indicate the comparative values of the various honeys. Low-purity honeys which have relatively more dextrin, gums and other non-sugars, are just as good honeys as those of the high-purity class. Abnormal honeys, however, are less desirable. The presence of the non-sugars in low-purity honeys may be due largely to a slight admixture of honey-dew, since most honeys contain a trace of this. It must be remembered in considering this subject that practically no honey is from a single species of plant, and therefore they will vary considerably according to the other nectars added to them, as well as according to local soil and climatic conditions.—Read at the Harrisburg Convention.



Old Queens Dull-Looking.

J. E. Crane, in Gleanings, thinks the most distinguishing sign, when one tries to decide by looks whether a queen is young or old, is the dull look of an old queen as compared with the bright look of a young one, no matter what the color.

Understocking a Locality with Bees.

The danger of too many bees on a given area has been pretty well understood, but perhaps no one heretofore has said anything about any danger from too few, unless it had reference to there being too few bees to secure proper fertilization of blossoms. Now comes this statement, in Gleanings, from the Colorado State convention:

W. C. Dyer said that he believed there was as much danger from understocking a location as from overstocking. He claims that, if the nectar remains in the flower, and is not gathered by the bees or other insects, it will dry down to a hard scale, and so stop further secretion in the blossom; but if there are sufficient bees, the flower secretes nectar for several days.

Caution as to Liquefying Honey.

Mr. E. E. Coveyou, of Michigan, the man who does such an extensive business in bottling honey, says that it is very important, in liquefying honey, to draw off the melted portion as fast as it melts. If the liquefied product is kept under heat until all the solid portion of the honey has become dissolved, it will lose some of its delicate flavor and darken somewhat in color. The same suggestion has come from other sources; and we may say in addition that Mr. Coveyou's experience has been quite in line with our own. It is a fine art to liquefy honey, and do it right, without impairing the flavor or color.

Right in this connection we discovered in our experiments with the capping-melter that it was important to allow the free honey to run off as fast as the cappings melt. The conditions in a capping-melter are much the same as those that are present in a tank that is melting up candied honey.—Gleanings in Bee Culture.

Tariff on Honey.

E. G. Mann, in Gleanings, regrets that at the Detroit convention a higher tariff was recommended without a fuller discussion. He says:

Those who advocate a higher tariff ostensibly for the purpose of excluding diseased honey and wax are open to suspicion, inas-

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much as the exclusion of unwholesome and dangerous substances may easily be controlled in our imports without a tariff; and, like beneficiaries of tariff in general, they wish to conceal their intentions under the cloak of public welfare. They keep our eyes on the dangerous germs of foul brood while they quietly abstract from the public 5 cts. on wax and 2 on honey, and this, too, while we are trying to get the people to consider our honey a desirable, cheap, and wholesome food.

Perhaps it may be well not to be too insistent on a rise in tariff at a time when there is a general cry for lower rates, and when even some of the men who have made fortunes from high tariffs are beginning to say tariffs should be lowered.

Using the Uncapping Knife.

Opinions differ as to whether an uncapping-knife should be used hot or cold. Perhaps they always will differ. What may be best under one set of conditions may not be best under another. As to whether the stroke of the knife should be up or down when uncapping, it would seem there should not be the same difference of opinion. There has been some discussion regarding these matters in Gleanings, and while there seems no great convergence of opinion regarding the first point, there seems some tendency toward a general preference for the downward stroke of the knife. Louis H. Scholl says:

I have tried both the up and the down stroke in uncapping tons and tons of honey, using many different knives, and I often wonder why the upward stroke is used. I have tried it often, especially to find the better way, and I have come to the conclusion that downward shaving is what I prefer. It seems easier to me; the knife can be handled better; the comb need not be tilted so far, and the cappings fall over and off readily instead of hanging to the knife.

Shaking to Start Work in Sections.

Geo. W. Williams, the enthusiastic apostle of shaking bees, gives this as his method of procedure when a colony seems slow to start work in sections:

To begin with, we will give the hive a vigorous kick or two to ease up our rising temper, and, incidentally, to cause the bees to fill themselves sufficiently with honey. Next, give them a few puffs of smoke, and then dump every bee, queen, drones and all, with a good sharp *thump*, in a pile in front of the hive; and as we put the frames back we will put the honey and capped brood in the center, and the younger brood to the outside, and the job is done. Now, if the bees do not start to work in the sections, and in *all* of them alike, before morning, it is because they are different from mine; and I will always believe that their education has been neglected. It would do your eyes good to see the beautiful cases of honey taken this season from just such a colony. In all my manipulations I try to keep the fact constantly before me that a *thorough shaking never fails to bring a colony into the same psychological condition that characterizes a newly-hived swarm;* and, as I go among them, and find one that, for any cause, fails to come up to the standard I have set, I *"shake"* it.—Bee-Keepers' Review.

"Bunching" Bees for Winter.

For 11 years Oliver Foster has practised with satisfactory results, in Bent County, Colo., a plan of outdoor packing that certainly has a good look. He bunches together 8 hives, 4 side by side in a row, and back to back with this another row of 4. For best results there must be no cleats on sides or back ends to prevent making a solid block of the 8 hives, neither must there be any projection of covers. If necessary, plain boards may take place of covers. The idea is to have the hives on a level surface, close together, with no space between them, either at the back or side.

Mr. Foster's plan of packing, especially with regard to entrances, seems particularly to be commended. He says in the Bee-Keepers' Review:

For convenience in packing we will nearly close the entrances, and then cover them all over with packing, so we will now form winter entrances at the *top* of the hives; ¾x2 inches is large enough. These may be cut from the top edge of the hive bodies, or they may be provided for in the cover. The top entrances for the four outside hives should be in the middle of the exposed side, while those of the 4 inside hives should be in the corners next to the outside hives. This will bring two entrances on each side of the block, and equally divide the distance between them.

In closing the lower entrances, leave an inch or two open at one side, that side farthest from the center, and lean a piece of tin or board 6 or 8 inches square against the hive over the opening to form a small, dark anteroom in front of each lower entrance. This will relieve the bees of any possible occasion to worry before the change in entrance is discovered, provide a dumping ground for dead bees, and a clustering place for live ones, if needed, in warm weather. See that all entrances are mouse-proof, and we are ready to pack.

Lean a layer of straw up against the block of hives all around on 4 sides, and bank earth against it. Lay straw over the top also, letting it project over the edge of the block all around, or 4 inches deep. Lay it so that the straws will radiate from the center outward. Then pile straw on a foot or more deep in the middle. We will cover this with earth also, but to keep it from rolling off over the edge, make a hoop the size of the block, 4 inches deep, of 1x4 strips of board, and lay this on the straw. Now shovel on all the earth that will stay on, spatting the steep sloping sides down smooth and snug into the corners.

Scholl and Divisible Hives.

Inquiry has been made as to Louis Scholl's management of divisible-brood-chamber hives. Advocating shaking as a means of arousing the energy of bees (Gleanings), he claims that the various manipulations of the season shake energy into the bees, and incidentally gives the following resume of his management:

To stimulate breeding, the upper and lower stories of the brood-chamber may be exchanged. This tears up the colony, and the brood-nest is re-arranged by the bees, which has a stimulating effect on them. Later the two shallow stories are exchanged again, and one with empty combs is slipped in between them to "knock swarming in the head." Just before the honey-flow they are torn up again, as the two lower stories (there are three now for the brood-chamber) are exchanged again. The top story, which is now partially filled with honey, so that the bees are crowding out the brood, is raised up, and a new super with foundation placed under it. This makes still another shaking; and, how those bees do work!

Honey in Jelly-Tumblers.

As containers for extracted honey, jelly tumblers have the advantage over bottles that they need not be thrown away by the consumer, but are of value as tumblers. An objection has been that unless kept right side up they allow the honey to leak. O. L. Hershiser has overcome this difficulty, and at the same time the difficulty of granulating. He says in the Bee-Keepers' Review:

"The tin lid of the jelly tumbler fits snugly, but does not *seal* air-tight. However, it may be made to seal air-tight by the use of a paraffined paper disk cut large enough to project about 3-16 of an inch beyond the edge of the top of the glass. This is placed on top of the glass while the honey is still hot, and the tin cover is forced down over it, thus tightly sealing the glass. So thoroughly may jelly glasses be sealed by this method that I have frequently carried them loose in my grip or pocket on long journeys, and for a considerable length of time, paying no attention to keeping them right side up, and no leaking occurred.

"The paper used for the disks is what is known to the paper trade as paraffined paper. The lighter colored and comparatively heavy stock should be used, as it makes a closer fit, and seals more securely, than the lighter grades.

"Honey sealed up in this way will remain liquid until sold and consumed, if that be within any reasonable time. The writer has no difficulty in so preserving honey in a liquid state for the space of 2 years, and he has samples still perfectly liquid that were put up for show purposes at the Pan-American Exposition, nearly 8 years ago."

Vicious Goldens.

"We have complaints from all sides of the very yellow bees, which are more vicious than the old hybrids. Yet we are obliged to furnish these bees, in spite of their temper and lack of hardiness. There are strains of very yellow bees that are gentle and hardy, but they are the exception. According to our experience, there is no better bee than the old leather-colored Italian, and we are inclined to think a slight mixture of black blood helps the harvest."—L'Apiculture Nouvelle.

Number of Bees Afield at One Time.

In Prak. Wegweiser it is stated that the number of bees afield at one time from an average colony is about 10,000. This was decided by taking the weight of a colony when all the bees were at home and comparing it with the weight when all were afield, making the observations at a time when the bees were getting nothing from the fields.

But would as strong a force go afield when nothing was doing as when there was the incitement of gain?

Again, what was considered an average colony?

The probability is that if we could find out the truth about it, we would find that what is an average colony in the apiaries of some of our best honey-producers, at a time when honey is coming in a flood, would be found to have in the field at one time a much larger force than 10,000 bees.

Ideal Location for an Apiary.

Here is the idea of E. D. Townsend, as given in Gleanings:

"The ideal location for an apiary is a clearing of about 2 acres in the midst of woods. I like to have the timber surrounding this apiary of second growth, for the second growth is denser than the first, and affords a better protection against the prevailing winds in the spring. Then if I could have this timber to my liking it would be about 50 feet high."

But some one replies, "The idea! why, that's 10 times as much land as is needed. A place cleared just large enough to hold the hives, and trees twice as high, would be the ideal condition for best protection." But listen to Mr. Townsend's reply:

"Such a condition, however, is just what we do *not* want, for howling winds might be blowing overhead that would chill every bee that ventured above; and, at the same time, if the sun were shining the temperature inside the enclosure would, perhaps, be such that

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the bees would venture out and be lost. It can be seen that, with twice as much of a clearing, and with the timber only 50 feet high, there is some circulation of cool air in the yard, which will hold the flying forces back whenever the general weather conditions outside are unfavorable. The fortunate man is the one who has just enough outside protection and no more. With no outside protection at all, as in cases where the hives stand exposed to the full force of the wind, during breeding time in the spring it is very difficult for colonies to build up to the proper strength for the early honey-flow in June. A high board fence is of but little avail for this outside protection, for it protects the hives only enough to entice the bees out-of-doors when it is too cold for them to fly, so that they are caught in the cold wind and lost."

Ants and Bees.

Ants are sometimes troublesome in and about hives in the North, but the matter is not so serious as it is in the South, where they sometimes clean out a whole colony. A. I. Root, in Gleanings, tells how they were mastered on the island of his winter home in the South. He says:

My good friend, we had the same trouble on the island; but when Mr. Shumard had about 200 laying hens right in the dooryard and all around the apiary, not an ant troubled his hives.

Little chickens and big went for the ants just as soon as the nest was stirred up anywhere in the garden or apiary, until the ants decided that *that* was not a healthy locality for them. Finally the women-folks complained so much about having so many chickens around that Mr. Shumard fenced them off to another part of the island, and then the trouble with the ants began. He placed all his hives on benches with the legs standing in basins of water, as you suggest. But this was a good deal of trouble, for leaves and trash would get into the water, and the ants would get across. By putting some kerosene on the water it prevented the evaporation and repelled the ants better than pure water alone; but so long as he kept the chickens away, there was a constant warfare. Every little while the ants would find a hive unprotected, and sometimes they would almost ruin a good strong colony just over night. I do not know of any thing that succeeds so well as a lot of chickens.

Dr. Miller's Question-Box

(Continued from page 128.)

could get the bees that could work red clover blossoms? The "A B C of Bee Culture" says that one man succeeded in doing that.

4. Have the Italian bees longer tongues since they have been bred in this country? and is it possible to increase the length of their tongues by constant selection?

5. On page 279 of "A B C of Bee Culture," is a plan for making increase. What do you think of it, and how do you like the nucleus system? INDIANA.

ANSWERS.—1. Yes, it is unusual, and not a very good thing. As far north as Indiana a queen reared in March is not likely to prove of much value.

2. You could gain but little by merely swapping escorts, and might lose much; for the new escort might kill the queen.

3. Control of mating would be a great help in trying to breed for any trait.

4. I don't think there is any difference in general; and yet it is possible that there may be some difference in particular cases if care in selection has been for any length of time.

5. The nucleus plan is good, as also the plan you mention in "A B C of Bee Culture." Which is best depends upon circumstances. But by the Alexander plan you quote in Gleanings you are probably led to believe that you can get two colonies in place of one to start in on the clover harvest, and thus get twice as much honey. I am sure that would not be so here, and I doubt if it would be so with you. I can get more clover honey from the single colony than from the two that result from dividing.

Buckwheat—Decoy Hives—Tobacco-Smoke and Bees.

1. Does buckwheat bloom at the same time that white clover does? How much should be sown to the acre? Does it make the bees want to swarm in the fall? Is the grain good for chickens?

2. Will you please explain decoy hives. I have seen the word used several times in the American Bee Journal. I believe that they are used to attract swarms.

3. Does it hurt the bees to use tobacco smoke. MISSOURI.

ANSWERS.—1. No, buckwheat is much later, usually being sown after clover is in bloom, say about the last of June. Some sow a peck to the acre, some twice as much. It is not likely to make bees swarm. The grain is good for chickens.

2. Leave an empty hive anywhere where a swarm may enter of its own accord—that's a decoy hive.

3. It may, if used heavily.

Rearing Queens for Italianizing.

I have 2 Italian colonies and 20 black ones. I wish to rear Italian queens.

1. After I have a frame of queen-cells prepared with Italian larvæ, will it have any effect on Italian queens if I put the frame over zinc in a black colony to be nursed by black bees?

2. Can I mate a queen with drones in confinement, by putting a young queen in a 2-frame nucleus and the desired drones? SUBSCRIBER.

ANSWERS.—1. No; but if you are counting that you will get cells started merely by putting brood over an excluder, a laying queen being below the excluder, you will probably have more failure than success.

2. No.

Bee-Cellar and Honey-House.

I am just beginning to keep bees, and would like to build a bee-cellar with a honey-house over it as given in the diagram. I live on the top of a large hill, and think it would be too cold to winter the bees outside. I live in the central part of Crawford Co., Wis.

I ask your advice as to whether to build or not. If you think it best for me to build, how should I build? Is my plan a good one? I have 8 colonies of Italian bees. WISCONSIN.

ANSWER.—Your scheme is good. An outside stone-wall 9 inches thick, and an inside wall of the same thickness, with a 6-inch air-space between ought to make a warm cellar. You propose to have your cellar 4 feet under ground and 3 feet above ground. Unless there is something in the lay of the land to prevent, you might have more of it under ground, making it warmer. You propose to have fresh air enter at the ceiling and have foul air enter at the bottom of the cellar. Better let fresh air enter at the bottom and foul air start out at the top. If you should make a permanent business of bee-keeping, you may want a larger building than 18 x 14 feet.

Granulated Unfinished Sections.

I have 31 colonies of Italian bees, and expect to build up a fine apiary, as I have one of the best locations in the United States for alfalfa and sweet clover. I am running for comb honey and am using T-supers, and agree with you in thinking they are far superior to the section-holders.

The honey-flow stopped sooner than I expected last fall, and I was left with 12 supers of unfinished sections on hand. I tried feeding them back last fall on the hives, but the bees would not remove the honey so I still have them in my honey-house. Last year I had 2 or 3 such supers, and I put them about 6 rods from the hives in the spring, and the bees soon found the supers but they not only got the honey, but they ate the combs so badly that I could not use them for baits. The honey that is in the 12 supers in the honey-house at present is granulated. How can I feed that back to the bees and have the combs for baits? Some sections have very little in, and others from a quarter to a third full. I will have more unfinished sections next fall, and I would like to know how I can get them cleaned out if the bees will not do it by putting them on the hives. UTAH.

ANSWER.—First, let me tell you what to do next fall. If you have enough supers of unfinished sections so that you have about one for each colony, set the whole business out at once, 2 or 3 rods away from the apiary, or farther, and the bees will clean them up without tearing the combs. But suppose you have only 5 supers for 50 or 100 colonies. In that case put the 5 in a pile, cover them over, leaving a hole where only one bee at a time can get in, and the business will be done all right. As to the sections on hand now, you can treat them the same way, only it isn't so certain that they'll clean out the granules. In the fall they can clean them out before any of the honey is granulated, in which case they will be sure to make a clean job of it. If I understand him correctly, so good an authority as G. M. Doolittle holds that if you let the bees now clean out the candied honey, it will be all right to give the bees the sections with the candied honey in them, as they will clean out the sections before putting fresh honey in them. I have some question about it. If you try any of them, I wish you would report.

Probably Common White Clover.

We have all over this part of the country a little white sweet-scented clover, which we call little wild clover. Is this the clover that is called white or sweet white clover in the American Bee Journal? When is the best time to sow the seed? ILLINOIS.

ANSWER.—I think it is the common white clover. It is sweet-scented, although the scent is not strong. It does not grow high, each leaf starting from the ground. Spring is a good time to sow, although it may be sown almost any time.

Tiering Up Supers.

I have the 8-frame hives. Is it wise to place more than one story on the hive? What I notice is, after having put on one super the same size of the hive, then another, that then when we take the 2 supers off, a cluster of bees can't get in the hive, and they hang outside and either die or stray away. Is this not discouraging to the rest? Would it be better not to put more on than one super, then take it off and replace by a fresh super? ONTARIO.

ANSWER.—I think you have hardly been careful in your observation. If bees hang out because too crowded or too warm in the hive, they neither die nor go astray, and are not at all discouraged. If they are busy gathering, give them super-room enough so they needn't hang out. To lessen the number of supers would do no good, and probably result in less honey. If there is nothing for them to do in the field, let them hang out to their heart's content.

Comb Honey Management—Best Size of Hive?—Long-Lived Bees, Etc.

1. Your article in the Bee-Keepers' Review, and the experience of a Mr. Myers, of Michigan, refutes the idea that our Northern land is not adapted to comb-honey production. Mr. Myers used the 8-frame Langstroth in home-made Hilton hives, heavier and thicker than those made by the factory. Would it be advisable in my locality to kill the queens in July each year? Two hundred and fifty pounds of comb honey were produced by Mr. Myers in some of his 40 colonies. He cut the queen-cells every 8 days. He used the T-super with, I believe, wooden separators.

2. If at the beginning of the honey-flow we put the frames of foundation in the old hive and put the brood in a hive, or in hives, on top of a super section with a Porter bee-escape underneath, would that repress the swarming fever more than the system you practice of cutting queen-cells out every 10 days? I believe that bees are more contented with new combs or foundation than old brood-combs.

3. Mr. Townsend advocates a 10-frame hive with extracting frames to the side of the comb honey sections in the section super for comb honey. Mr. Chapman told me himself that the 10-frame was too heavy, and he uses the 8. When doctors differ who shall decide? Had we not better try to find out for ourselves?

4. Is it not easier to cut out queen-cells in the Danzenbaker hive than in the Langstroth? I am pretty badly smitten on the Danzenbaker hive, but I see you do not like it as well as the 8-frame Langstroth.

5. One writer in the American Bee Journal says it is advisable for beginners to use the 10-frame Langstroth at first; that it can be used for an 8-frame Langstroth, and then he can satisfy himself hereafter which style he likes best. Is not his method logical?

6. I am at present of the opinion that a larger colony can be obtained by your system

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than by the combined Chapman and Dudley Tube combination, although it would gladden an enthusiast's heart to see the way the masses of bees will ascend into the section super by the former method. Does my opinion coincide with yours?

7. Would not the finest comb honey, on the average, be produced by the Doolittle system, more especially if the old hive containing the brood were placed close to the new hive, with a Dudley Tube connecting both hives?

8. I know of one person who has long-lived bees. Would not bees of such inheritance be extremely valuable even in a short honey-flow?

9. You, no doubt, read the able article of Chas. Trout, of California, in the American Bee Journal, on rearing early queens and drones. Could we not by this method get queens and drones prior to the honey-flow, in our Northern territory? MICHIGAN.

ANSWERS.—1. I don't know what plan you have in mind, but I have some question whether you will like the plan of killing all queens in July. Try it on a partial scale first.

2. That plan will do more to prevent swarming than cutting out cells. But with brood over the sections, the cappings of the sections will be darkened, and the brood over the escape may not be cared for in the best manner.

3. "Let every man be fully persuaded in his own mind."

4. I know of no reason why it should be easier. If you take into account taking out and putting back frames, it is harder.

5. Although a 10-frame hive is not entirely convenient to use as an 8-frame hive, still it can be used in that way, whereas an 8-frame can not be used as a 10-frame at all.

6. Not having had experience with both methods, I am not in position to give them the fairest comparison.

7. I'm not sure I catch your meaning. Honey of best quality can be produced by the Doolittle system; but so it can by other systems.

8. Yes, long life is valuable, whether flows be long or short.

9. Mr. Trout says his "method is still in the experimental stage." However it may turn out in California, it hardly needs any experimenting to decide that it would be a dead failure here.

Effect of Bees on Flowers.

I have a next-door neighbor who is engaged in the florist business, and he asserts that flowers for cutting, when visited by bees, deteriorate much more rapidly than flowers that have not been so visited. In other words, the presence of bees shortens the life of cut-flowers or flowers for cutting. I am particularly desirous of keeping a few colonies of bees but do not desire to injure my neighbor's business. Could you advise me as to whether my bees would materially affect his interests? NEW YORK.

ANSWER.—The life purpose of a flower is to produce seed. When fertilization has taken place, the bloom is no longer needed to attract the bee, and, other things being equal, one would hardly expect a fertilized blossom to last as long as an unfertilized one. In the case of cut flowers, however, there is in most cases no production of seed. A cultivated rose, for instance, with its multitude of petals, is a botanical monstrosity, not capable of producing seeds, at least to the same extent as a single rose, and if it does not become fertilized by the visit of a bee, one can hardly see how such a visit should shorten its life.

Increasing Number of Colonies—Alsike Clover—Bees Dying Off—Eyes of Bee.

I enjoy reading the "Question-Box" very much, and consider it *alone* worth all that the American Bee Journal costs. I had 30 colonies last year, spring count. I increased to 50 by artificial swarming. I had only 4 natural swarms. They gave me 3500 one-pound sections of fine honey, and 300 pounds of extracted. I use your famous T-supers, and practise tiering up, as I find I get by far the best results.

1. Do you think with the above results from 30 colonies that I would be safe to increase to 100? There are not to exceed 25 colonies outside of mine within a radius of 3 miles. Our principal yield is white clover. We have had some basswood, but they did not work on it last year. There is a little sweet clover on the railroad.

2. Do you think it will pay to buy alsike clover seed for farmers to sow within one mile—would say 40 acres? Would it make any perceptible difference in the yield of honey?

3. Why do the bees die in some colonies worse than in others in the same row, packed the same, and to all appearances in the same condition? In front of some hives there seems to be a quart or more of dead bees, while in the next hive there will be none at all. My bees are packed outdoors under sheds facing the East and South.

4. How many eyes has a bee? IOWA.

ANSWERS.—1. Of course it can only be a guess; but I feel it a pretty safe guess to say that you would be all right with 100.

2. Yes, or to sell it to them at a bargain.

3. Differences in individual colonies are not easily accounted for. Yet the difference may be more apparent than real. In one case the bees have gone a distance from the hive to die; in another they remain in plain sight. A superseding of queens or a difference in their laying may bring it about so that in one colony there may be more old bees ready to die than in another.

4. Each bee has 3 simple eyes. The number of compound eyes varies. Cheshire counted on each side of the head—in a worker, 6300; in a queen 4920; in a drone 13,090.

Wedged Frames—Super Springs—Queens and Swarming.

1. In your answer to "Virginia," you tell him to use the wedges that come with the frames. I make my frames. Please explain how to make or get them, and how to use them.

2. Do you use springs with the T-super? If so, how many, what kind, and how? Also how near full would the super be before an empty should be placed below it? Will the bees then finish it above?

3. All my queens are clipped with the hives flat on the ground. Will the queen go back into the hive when the bees swarm? KENTUCKY.

ANSWERS.—1. A saw-kerf is made in the under side of the top-bar, into which the edge of the foundation goes. Then close beside this is another saw-kerf made by a finer saw, and into this narrower kerf the wedge is crowded. The wedge is a thin strip of wood as long as the under side of the top-bar, one side being chamfered down to an edge, so as to enter the kerf. If you make your own frames it will perhaps be easier for you to have no saw-kerf in the top-bar, but merely to let the foundation come up to the top-bar on the under side, and cement it there with melted wax.

2. I use a single spring in each super, crowded in between the follower and the side of the super. It is the common super-spring sold by supply-dealers, in shape something like the elliptic spring of a buggy.

3. Usually the queen returns to the hive when a swarm issues, but occasionally one enters another hive, or wanders off and is lost.

Bee in France and America—Honey.

1. Let us know who is right, the American or the Frenchman? I read on page 40, under the heading, "The Bee a Winner in France," that the bee drew 523,843 votes, as a domestic animal, which looks well. But the G. B. Lewis Co. print on the first page of their catalog: "A bee is a little insect." How can it be domestic in France, and an insect in America?

2. The bee gathers nectar from the flowers, which nectar, after undergoing a chemical process in the bee, becomes honey. Is not nectar dumped into the comb, then evaporated and becomes honey?

3. According to the Pure Food Law, must every honey-package be labeled with the producer's address, if sold by the producer to grocers or customers?

4. Please send me a few sample labels. I sell most of my honey in Mason fruit-jars. WISCONSIN.

ANSWERS.—1. A bee is domestic in France and an insect in America just the same as a dog is domestic in France and a quadruped in America; it is an insect in both countries and it is domesticated in both countries.

2. No; if you were to gather nectar and put it in cells it wouldn't be honey, and if the bee were to dump the nectar into the cells just the same as it gets it from the flowers it wouldn't be honey. It must undergo a change in the bee, although that change may continue afterward.

3. No; the law does not require that the producer's name be on the label. It does not require that the word "honey" be on the label or that there be any label at all. But it forbids labeling it honey unless it is honey, and if the name of the producer is on the label it must be the name of the true producer. In a word, the label mustn't lie.

4. I have no labels, as I don't produce extracted honey; but you can likely get them from any bee-supply dealer.

Unfinished Sections—Comb Leveler—Position of Pictures in "Forty Years."

1. Last fall the honey season closed suddenly with supers on the hives. As a result, I have a big lot of sections unfinished, too many to throw away. Of course, I let the bees clean them out last fall. Will it do to give the sections full thickness of comb to the bees next summer without leveling down the comb, or will the new honey be off-color as put in last year's comb? Of course, the sections are clean.

2. Can you tell where I can get the Taylor Handy comb-leveler? I haven't seen it listed in the catalogs for some years. Or do you think it is not necessary to thin the comb?

3. In your "Forty Years Among the Bees," why is it that the illustrations are not on the same pages as the descriptions of things? For instance, on page 200 you refer to Fig. 74, but the figure itself is on page 217, and so on all through the book. CALIFORNIA.

ANSWERS.—1. If the sections are not in the least discolored, they may be given just as they are. Sometimes the edges are discolored, the rest of the section being white. In that case they should be leveled down until the discolored part is all removed.

2. I think it is entirely possible you might get one by writing to one of the large manufacturers, even if the Taylor Handy Leveler is not on their list.

3. You'll have to ask the publishers about that. They're the guilty parties in the case. Indeed I don't remember that they consulted me about it. Go for them good and hard, for it would be much handier to have the pictures right on the page where reference is made to them. But there are places where there would be 3 pictures on the same page, and that couldn't very well be without putting one picture on top of another, which would hardly do. After all, there may be some good reason why the pictures are put the way they are.

Perhaps Bee-Paralysis—Moth and Bees.

I am a novice in the bee-business and am into it partly as a side line, and partly for love of the "little busy bee." Western Washington is a very poor honey-producer, about one year in 4 or 5 giving a fair crop.

1. I have one dovetailed hive of hybrid Italians that is a sore puzzle to me every year. They appear strong and healthy in the spring, but as soon as they begin turning out young bees, I find on the alighting-board a number of bees which are *coal black* in color, no down on them, and slimmer than ordinary bees. They can not fly, but just flutter their wings and hop about, while the rest pull them about and act in a generally excited way. This goes on all summer, the bees giving little or no surplus, while adjacent colonies are doing fairly well. Can you explain? Last year was very poor indeed. Over half of the bees in this neighborhood will not winter through, which I consider a good thing, as nearly everybody has a few box-hives from which they derive no benefit at all. I sell my honey locally, getting 25 cents per section for all I can produce, and then some, while shipped-in honey brings only 15 or 20 cents. Of course, I put out nothing but No. 1 fancy combs, using the other grades myself, or as bait-combs.

2. Do bees carry *moth* while swarming? I caught 3 swarms that came from moth-infested hives of a neighbor, and had to destroy them all in the fall. They were full of web and caterpillars. None of my own bees are bothered at all.

That February number of the American Bee Journal was a *"cracker-jack!"* WASHINGTON.

ANSWERS.—1. Looks like what is called bee-paralysis. The bees are probably no slimmer than others, but look so because their plumage is gone. They probably appear to be trembling. In the colder parts of the country the disease doesn't amount to much, but it is a very serious matter in the warmer parts. Many cures have been given, only to prove failures afterward. O. O. Poppleton has had much experience with the disease, and recom-

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mends (Root's "A B C and X Y Z" page 135) the following treatment: "He forms as many nuclei from strong healthy colonies as there are sick colonies to be treated. As soon as the nuclei have young laying queens, he gives to each, as fast as they can take care of them, one or two frames of the oldest capped brood from each of the paralytic colonies, and thereafter till all the brood of such colonies is used up. The diseased bees and queen he next destroys with sulphur fumes, fumigating the hives at the same time. . . . It is important that in giving the combs to the nuclei, there be no dead bees in the cells," as the disease is transmitted by dead or sick bees, although not by the brood or combs.

2. I don't believe that bees ever carry with them tne moth, its larvæ, or its eggs.

Fastening Comb-Foundation—Tiering Up Supers.

I understand extracted honey, but never produced any honey in the comb in sections. I have 27 colonies, all with Italian queens introduced last season, 16 of them being in 2-story hives, the balance being singles. I make my own hives. As I get swarms I aim to put all into single-story hives. I expect to buy supers for them. I have one strong colony in a box. I mean to make a swarm for one of my upper stories, then in 21 days to make another from it. I also have 3 colonies that I bought complete, hive and all, at a sale, for $3.50. They had 33 pounds of honey in the supers. My hives are standard size, but the frames run the narrow way instead of lengthwise.

1. How do you fasten in brood-foundation? Also explain all about how you make and use splints. My frames are 10¾ x 7⅝ inches, inside measure.

2. Give me all the information you can as to the best and cheapest way to fasten foundation starters in the top of the sections. Must I buy the new hive the supply-men advertise?

3. I have seen men use the super and when full put an empty one under it. How would it do to take out the sections when filled and replace the empties? KENTUCKY.

ANSWERS.—1. Many of my frames were filled with foundation by pouring melted wax along the angle between the top-bar and the foundation, but of late years I wedge them in the sawkerf with the wedges that supply dealers send out with the frames. I never made splints—it's so much cheaper to buy them. But if you have a fine buzz-saw, all you have to do is to saw out little sticks 1-16 of an inch square and ⅛ of an inch shorter than the distance between the top and bottom bars. The splints are pressed into the foundation by the edge of a little board kept wet. See reply to "Minnesota," on page 103 of the March number.

2. If you have only a hundred or so to fill, the cheapest way is to press the edge of the foundation into the wood with a case-knife. If you have a considerable number, you cannot afford so slow a way, and should get a foundation-fastener. The Daisy foundation-fastener is one of the best. You don't need to buy a new hive to use sections. All that is necessary is to have your super fit on your hive, and almost any super may be fitted to almost any hive.

3. If you mean that you would have only one super for a hive, taking out the sections when filled and putting empty sections into the super again, let me tell you that would be an extravagant and wasteful way. You wouldn't get as much honey that way as to put the empty super under the other when the bees have it about half filled or less. I often have 5 or 6 supers on at a time and think I gain by it.

Prevention of Increase—Transferring —Making a Living with Bees.

1. I see by your writings that you have not yet succeeded in preventing swarming. Do you prevent increase?

2. What do you do with the swarm when it issues when you do not want to increase? Do you shake it back into the hive that it came out of?

3. Do you cut all the queen-cells every 6 days?

4. I have both 8 and 10 frame hives with bees in them but not many empty bodies with combs in them. I intend to work half of my bees for comb honey and the others for extracted. I have no empty bodies but intend to use supers 5⅝ inches deep, with foundation in, one on each hive to give the queen more room. Then when the honey-flow comes on, raise up this super with brood and put another in between, some with sections and others with frames. Do you think I can manage to prevent increase with these hives and supers? How would you advise me to go at it to prevent increase?

5. I have 30 colonies that I must transfer, but not increase them. How would you transfer them if they were yours?

6. Do you think I can make a living with the honey-bee? WISCONSIN.

ANSWERS.—1. Yes, it is not difficult to prevent increase.

2. Comparatively few swarms really issue for me. My queens are all clipped, and if a swarm does issue, the queen not being able to go off with it, the swarm returns to the hive of its own accord.

3. About once in 10 days I look for queen-cells, and destroy any that may be present. Next time around, if I find queen-cells well advanced, I make the colony queenless for about 10 days, or take some other measures that will make the bees give up swarming. At the end of 10 days, if I can give them a young queen that has just begun laying, I do not need to go into that hive again for the season.

4. When a colony swarms, you may remove or destroy the old queen, and a week later destroy all but one queen-cell. There should be no more swarming, and of course no increase.

As you intend to produce both comb and extracted honey, you may do thus: When the harvest begins, and before there is swarming, put all the brood in an upper story, and in the lower story the queen and frames of foundation or combs, with an excluder between the 2 stories. There will generally be no swarming, and the combs above the excluder will be filled with honey. Of course you can add section-supers.

If, after any or all of this is done, you still have more colonies than you think best, it is easy to unite spring or fall. You can get much information on the subject from "Forty Years Among the Bees."

5. Wait till the colony swarms, hive the swarm in a proper hive, set the old hive close beside it. Ten days later move the old hive to the other side of the swarm, setting it close beside the swarm. Eleven days later still, break up the old hive, giving the bees to the swarm and melting up the old comb.

6. That's a hard question to answer, but it's getting to be that quite a number are making a living at bees, and for anything I know your chance is as good as any.

Bees Affected by Bad Winter Stores—Italianizing.

1. My bees are not doing so well this winter on account of poor honey. We had a long dry spell here in August and September and the bees gathered lots of honey-dew. I winter my bees in the cellar under my house, which is a very good place for them, as the cellar is very dry and keeps an even temperature of about 40. I put 9 colonies in winter quarters, and they were all heavy in stores, but a whole lot of it was well sealed up honey-dew. I looked them over February 20, and they were all living, but some of the hives were spotted quite badly, and I also noticed on some of the hives a yellow watery stuff was running out. What do you think about this? Is not that a bad sign? I have been watching the American Bee Journal very closely to find something about honey-dew, from other bee-keepers, but so far I have not seen a word. It was certainly not only our bees here that gathered honey-dew last fall, as the dry weather in August and September was spread over a large territory. I see in the bee-book that it is safest to extract and feed up again with sugar or good combs, but last fall this was almost impossible, as it was very late when the flow was over, and as soon as we tried to open up a hive the bees were over us robbing. This is my third winter that I have had bees, and have been very successful so far.

2. Last year I got 642 pounds of extracted honey from 5 colonies, spring count, and increased to 9. Our bees are all hybrids and I have been thinking of getting some Italians, but think it would be safest for me to get one or two nuclei with queens. Where would you advise me to get them?

3. I see in the Journal that you have queens to sell. Could you also furnish 2-frame nuclei with queens?

When I get my bees out of the cellar I will report how they come out.

WISCONSIN.

ANSWERS.—1. Yes, it is not a good sign to see hives spotted or to see liquid running out of the hive-entrance. Although the two things may go together, they are not one and the same. Diarrhea may come from bad food, and there may be no liquid running out of the hive. Liquid may be running out of the entrance without diarrhea, although such a condition predisposes to diarrhea. Lack of ventilation, especially with too cold a temperature, causes the moisture from the bees to settle on the walls of the hive, condensing into water there, and there may be so much of it as to run out of the hive. About the only thing that can be done about the honey-dew is to get it out of the hive in the fall and give the bees something more wholesome. Even if all the honey-dew is not removed, it will help to give sugar-syrup, as this latter will be likely to be used first, being more convenient to reach. In your case the thing to do now is to get the bees out for a flight as soon as the weather permits, and that will likely be before this gets in print.

2. You will probably be safe to order from any of the advertisers in the American Bee Journal.

3. I do not sell nuclei. My business is producing honey. I rear queens for my own use, and do not make a business of selling queens. My bees are mostly hybrids, and cross, so they are not a very marketable article, only sometimes some one insists on getting an untested queen in spite of knowing what they are. But I think not more than half a dozen a year.

Wonderful Year for Rains.

We have had another fine rain. It has been a wonderful year for bounteous and timely rains. Unless the cold winds prevail we shall have an excellent honey-year.

A. J. COOK.

Claremont, Calif., Mar. 22.

Wintering Well—Clover All Right.

Bees have wintered fine in the cellar. Many are hanging out in front of the hives, but all are very quiet and in the very best condition. I have some nuclei on 8 frames, 6 x 6 inches, and they are in perfect condition. Indications are good for a crop of clover honey.

Mercer Co., Ill., March 25. S. F. TREGO.

Bees Have Wintered Well.

Last season I wintered 5 apiaries on the summer stands without a single loss, and would have repeated the same thing this winter but for a defective hive-entrance and a mischievous mouse. I think that bees have wintered pretty well everywhere. All we want now is the blossoms. H. G. QUIRIN.

Bellevue, Ohio, March 26.

Open-Top Bee-Tent.

In my work with the bees I have learned that robber-bees will not go over an open-top tent with walls 5 or 6 feet high, which is altogether better than those little closed-top tents which double one up like a jacknife while at work. I have never seen this in print, and think that perhaps if known it might be a benefit to the fraternity. H. W. LEE.

Pecatonica, Ill.

Long Winter in Colorado.

We have had a long winter here—I think the longest in over 20 years—and there must surely be heavy losses in bees. The farmers were just about getting started in their work the last few days, when night before last we had a thunderstorm and rain, turning to snow. Today the snow is going off, but it will be too wet for farming for some days.

R. C. AIKIN.

Loveland, Colo., March 25.

Wintering Bees in Warm Room.

On page 92 of the March number, under the head of "Canadian Beedom," I note a criticism, or at least much honest doubt expressed in regard to the advisability of wintering bees in a warm room. On this above subject I

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wish to record my testimony, as I have had a little experience and some observation. The winter of 1907 and 1908, I had a colony in a 10-frame hive in a warm room. The temperature was 55 degrees to 75 or 80. True, they built up early very much stronger than those outside, going into winter quarters the same strength and under the same conditions, in November. But I utilized their strength to make increase, taking from them every few weeks 2 frames, to start a nucleus, thus keeping them down to the proper strength for the honey-flow.

As it was bees I wanted last year instead of honey, I produced from this one colony wintered in a warm room, 6 colonies that built up strong in 10-frame hives, and have all come through the winter in good shape, and secured 222 pounds section honey. I feel sure that now under the same circumstances I could have 3 and perhaps 4 honey-producing colonies ready for the honey-flow. I know that if I had the warm room large enough, I would have all of my bees in it, and I would take care of the early strength in having more colonies ready for the honey-flow. If we don't keep bees for what, and for all, we can get out of them, then why do we keep them?

A. J. Jones.

Urbana, Ohio, Mar. 24.

Report of Season of 1908.

I started last spring with one colony of black bees, and increased to 4 colonies which are at work nicely, but the weather is too dry and cold. The spring forage is somewnat short, but I hope it will be nice anyway. I introduced 2 Italian queens last fall, which I had success with in introducing, and those 2 Italian colonies are the strongest at present. I am going to Italianize all my blacks.

As stated above, I increased from one to 4. That is, I got one colony from the woods from a tree, which is the fourth colony, and last week I transferred a colony from a tree and it is a fair colony. So I have 5 colonies to start with this spring. I have all my queens clipped. I wish to increase to about 8 or 10 colonies before fall. Jos. Jezek.

Nelsonville, Tex., March 30.

Advantage of 9-Frame Hive.

When I commenced to keep bees I used the 8-frame dovetailed hive with Hoffman self-spacing frames, and supers with section holders and separators. By experimenting a little I came to the conclusion that the hives were a little too small, and I had lots of trouble to get my bees to work up in the supers. So I enlarged the width of the hives to hold 9 frames, and I changed the supers to T-supers. I run the T-tin lengthwise of the supers, and use starters in the sections.

The advantage I have with the 9-frame hive is, that it gives me one more frame for brood-rearing, which means a large colony, and one more for winter stores. It also adds 8 more sections in the supers, as I run for comb honey altogether. My bees have been doing extremely well as to the season. T. A. Crabill.

St. Davids Church, Va., Mar. 15.

Hunting Bee Trees—Reminiscences.

This is a good place to live, such fine clear water, cold as ice in the summer. My father moved here as one of the first settlers that came to this country. He was in the War of 1812—fought the British. When he came to this country the game was so plentiful that you couldn't raise hogs nor sheep, on account of the bears, panthers, and wolves. He lived on bear meat, venison, and honey and corn-pone ground in a hand-mill. He made his living by selling bear and deer skins and digging ginseng. There is ginseng in these mountains yet, but few bear and deer.

My father was a great man to hunt bee-trees. I have known him to follow them 2 miles by the sun, and find them. He had honey all the time. He would catch the bees when he cut the bee-trees, and bring them in. Then he would hunt a hollow tree and saw off 3 feet and burn it out, then scrape the coals off the inside, bore holes through the gum, and put sticks through crosswise. He would hew out a slab of a log and put on top of the gum. I have known him to have 40 or 50 of these gums at a time. Some years he wouldn't "rob" more than half of these gums. He didn't need it. He couldn't sell the honey. He always got all the honey out of the woods he needed. No one thought of a patent bee-hive then.

I would go with him hunting bee-trees when just a little boy, and would get so hungry I would eat the bark of the little birch twigs and mountain tea. I would have been a better bee-hunter if I hadn't been spoilt when young. I found 4 bee-trees last summer here. Some of them were very rich. There are very few frame bee-hives here.

This is a good place for bees, as there is plenty of bloom for them to store honey from. I am going into the bee-business on a small scale. I have bought five 8-frame dovetailed hives, everything complete. I have 3 colonies in box-hives, and am going to let them swarm, then I will transfer them to frame hives.

I am nearly 70 years old. All the learning I ever got was in a log schoolhouse with a dirt floor, one whole end for a fireplace, a log cut out for a window and greasy paper pasted on the crack for a window-pane. I got very little education. I was reared in a place called "Puzzle Hole," in between two big mountains. When you got in there, it puzzled you to get out. There were no roads, but a tow-path. They had to mark the trees or blaze them to get out.

T. J. Coager.

Lanes Bottom, W. Va.

Salt Lake Prospects Brightening.

The worst half of the smelters here in Salt Lake Valley have been closed down, and we are trying to build our industry up again with a fair show of success. The sun shines brighter again, and all nature is in bloom as of yore, and instead of the destructive poison blasts, we now have the gentle rains free from the poisonous effects which the smoke produced; and it seems more like old times with its fragrant honey-flowers and the little busy bee—millions strong—gathering honey all day long. The bees I thought, last year, did better for me than at any time before; and while we can not tell what may happen, the outlook at present in the Salt Lake Valley for a good honey-flow this season is encouraging, as there will be irrigation waters in abundance.

E. S. Lovesy.

Salt Lake City, Utah, March 25.

Massachusetts Convention.

The regular monthly meeting of the Massachusetts Society of Bee-Keepers was held Saturday afternoon in the Ford Building, Boston. Mr. Allen Latham, of Connecticut, spoke on "Swarm Control." He said he believed in giving the bees plenty of room, even putting on an extra brood-chamber, besides supers, sometimes placing a super between the brood-chambers, and another super over them; also giving ample entrance space. If the bees are cramped in their quarters they cluster on the outside of the hive, and then you may look for a swarm.

At the close of Mr. Latham's address the members asked questions, which he answered in accordance with the above.

The annual meeting of the Society will be held on the first Saturday evening in April, when the election of officers will be held.

The proposed law relating to bee-diseases in this State, which was submitted to the Legislature, has been laid over for a year.

The summer field-day will be held this year on the first Saturday in August, at the apiary of Mr. H. W. Britton, in Stoughton.

Joseph B. Levens.

Malden, Mass., March 8.

Baby Queen-Mating Boxes.

Of late I have noted some cditicism of small nuclei (Baby Mating Boxes if you please) from certain quarters to the effect that these small mating nuclei are being given up by many as too much trouble to look after, and that strong 3 and 5 frame colonies are preferred.

The criticism of this economical small mating-box plan of queen-fertilization, you have perhaps noted, comes mainly from large honey-producers—from men who own from 300 to 500 colonies of bees. For such large producers the strong nuclei may be more satisfactory but look at the number of bees and the quantity of extra bee-material required! It is simply out of the question with the one owning perhaps but 20 colonies.

The large producer will think nothing of breaking 25 colonies into full-framed nuclei, both for increase and queen-rearing—but what is the little fellow with a queen-trade to do? Can he afford to sacrifice even 10 of his full colonies in this fashion? No, he must economize; he must not use so many bees in his mating nuclei or he will not have strong colonies enough left to supply him with queen-cells, drones and extra bees for his queen-rearing operations.

Those who have most sweepingly condemned small mating nuclei overlook the fact that there are thousands of bee-keepers who do not own 25 full colonies each in all, yet have a desire to rear a few queens for their own use and have a few to sell. To such, it must be admitted, the small Baby Nuclei plan is a boon—it is economical, efficient, satisfactory and possible to the small producer.

Small mating nuclei are not so much bother, after all, when expense is considered. All that is required is regular feeding of thin sugar syrup once a week or so, when honey is not coming in—that is all.

The Twin Mating Boxes are provided with convenient feeders, and the task of giving each box a cupful of syrup once a week is not a great one—is it, now? Swarthmore.

Bees in Good Condition.

Yesterday was the first day since my arrival home (March 20) warm enough to open the hives of my bees. I opened about 30 of them, and found them in good condition. They had consumed but a small amount of stores, and there was small loss in bees, but they have been more forward in brood in many years than they are this year. This is to be accounted for by the coldness of this month. I have not lost a single colony of the 51 packed up, and all outdoors. John P. Coburn.

Woburn, Mass., March 25.

Bees Wintering Well.

Taken as a whole, Mr. Doolittle's report in the March number of the American Bee Journal applies to our locality in almost every particular. The main difference seems to be all in our favor. While he reports no good flight during winter, we had quite a number of good ones. One in particular was something uncommon. I do not remember the exact date, but it was about midwinter. We had a regular spring day. The thermometer registered above 60 degrees all day, and the weather was lovely. The air was full of bees all day long, and their buzzing reminded us of June or July.

All my bees are on the summer stands, snugly packed in chaff; the majority of them have sealed covers under 6 inches of chaff, and the remaining portion are packed with blankets, and chaff mats next to them. So far I can not see very much difference in wintering between the two methods. All seem to be doing well; every hive is clean and dry, and bees seem to be in a healthy condition. but as Mr. Doolittle says, the most trying months are yet to come. Don't count the chickens too early. G. C. Greiner.

La Salle, N. Y., March 26.

Bee-Keeping in Alabama.

I have been among the bees for 2 years, and although yet a novice I find them more and more interesting every year.

Two years ago there came by our home a large swarm of bees which clustered on a near-by tree; we caught them and put them into a barrel, with a cross-stick in the center. The next day we made a hive with frames somewhat like the dove tailed hive, and transferred the bees from the barrel into the home-made hive. Although this was a large swarm they absconded within a few days.

I did not give up, but began to read about bees and found the more I read the more interested I became. In my search for reading matter, I came across a catalog of hives, etc., and ordered a beginner's outfit, which consisted of 5 hives and supplies for the same.

At first I thought there would be trouble in obtaining swarms, but I soon eliminated this, by offering 25 cents to any one who would inform us as to the whereabouts of a swarm, and in a short time I had the desired number.

A hive was always kept ready, with full sheets of foundation in frames, also a box was kept in readiness which contained smoker, veil, gloves and smoker-fuel. When we were informed as to where there was a swarm, the hive and box were placed in the buggy, the horse was hastily hitched up, and off we went for the "honey-gatherers." When the bees had been put into the hive and the top placed on, the hive was then lifted into the buggy, and soon another colony was in our bee-yard.

At the first of the season (1907) we cut a bee-tree and transferred the bees into a dovetailed hive. They were very weak at first, many of thm having been killed when the tree was cut, and extra care was given them as

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they were the first wild bees we had captured. A large part of the old brood-comb was cut and fitted into the frames which were given them, also frames of unsealed brood taken from other flourishing colonies. By caring for them in this way they were in fair condition at the close of the season. These bees were the blackest and worst about fighting of any in the apiary—they were known as "the fighters." When any one ventured near this hive he was sure to be attacked by them; although ill-disposed they were the most active workers in the yard. When I was ready to take off a super from the black bees I was quite sure that my smoker was burning perfectly, and my veil in good condition.

One day when I was watching the black bees I noticed some yellow ones coming out of the hive with them, and in about a year the whole colony had changed from black to yellow. They also changed in disposition, and now are the most quiet bees in the yard. At the first of the season (1908) I purchased a queen and introduced her, but in a few days she had absconded. Possibly she went into the hive of the blacks and took possession as she was a young queen, or the bees might have superseded her, as we gave them unsealed brood taken from hybrid-Italians.

Another colony which deserves comment—they are hybrid-Italians and last season produced 125 sections of honey.

All 10 of my hives have been wrapped with heavy paper and well protected from the weather, with plenty of honey to last through the winter months, and will be ready to start to work next season, with a large army of honey-gatherers.

Turning to the financial standpoint, I have gathered from 6 colonies 400 pounds of honey (not including that left over in frames). This was sold for 10 cents per pound, and yielded $40 on a $46 investment..

I purchased this year, from a dealer, 25 second-hand hives for half the original price; one coat of paint makes them look as good as new.

Next season I will move my bees to the prairies where the clover abounds.

I. Mason Handy.

Mt. Meigs, Ala., March 27.

Comb Honey Production.

This season, no doubt, many comb-honey producers will try the methods of our experts in this line. Mr. Myers, who has joined the great majority, practised the method of Dr. Miller. He cut out the queen-cells of his 8-frame double-walled Hilton-Langstroth hives, every 8 days, and could report a yield of 250 pounds of comb honey from one of his colonies, or all of them, I forget which. This shows that a mighty colony of bees will produce comb honey in sufficient quantities to pay well in Northern latitudes.

I have practised the method of Chapman, of Michigan, which consists in putting frames containing brood in a second story. At the commencement of the honey-flow a Porter bee-escape can be placed under the hive containing brood, when the hatching brood will descend into the brood sections. I know the bees will fill the sections by this method in a manner to gratify the comb-honey producer's heart. The old combs, especially those containing pollen, can be kept out of the brood-chamber by this or the Dudley-Tube method, and one cause of swarming, according to Aspinwall, be removed.

One Ohio bee-keeper claimed to me to have gotten a splendid supply of comb honey last season by Doolittle's method, with the exception that he placed the frames of brood alongside the other, with a Dudley Tube connecting both. Mr. Williams has given his comb honey method, so the comb-honey gentlemen have plenty of methods to practise on this season.

Geo. J. Moloney.

Wolverine, Mich., March 27.

Colonies Weak—Poor White Clover Prospect.

The predictions I made last fall, from all indications at this date, will come true. First, bees will come through weak in numbers this spring. When I finished taking off comb honey last July, I never had colonies in a better condition, both in number of bees and amount of the honey in the brood-chamber for fall and winter. In fact, I thought the brood-chamber was filled too much with honey, that there would not be enough room for the bees to breed plenty of young bees in the fall, for we must have young bees hatched in September and October if we want good, strong colonies in the spring. Dry weather continued until cold weather, and the honey-flow was cut short. On examining them in September I found I would have to feed them, for they were short of honey, and had very little young brood. I commenced feeding sugar syrup to increase their stores for winter and stimulate them to breeding. The former I accomplished. The latter I failed in. I laid the failure to get them to breeding to the dry weather, drying the bloom so that they produced no pollen, for I could see them bring in very little of it.

The second prediction was that we would get no white clover honey in Southwestern Ohio this year. The summer and fall drouth killed all the white clover, and there was not enough moisture to sprout the clover seed last fall. At this date I am convinced that I was correct, for I have not been able to find the first white clover plant. Alsike clover has done better than white or red clover. It seems to stand both drouth and wet better than other clovers. People have just commenced raising it in this community, and find it makes a fine feed, and it can be raised on wet land that red clover will freeze out on. Up to this time I have lost 5 colonies out of 93.

J. G. Creighton.

Harrison, Ohio, March 29.

Early Brood-Rearing—Good Results per Colony.

Mr. Jas. W. Bell of Kentucky (page 73), is experimenting in attempting to rear brood during the months of January and February, by keeping a colony in his room at a temperature of 60 to 70 degrees. It seems to me that there should be no trouble to rear brood in his locality during either of these months, with bees on the summer stand. Brood-rearing is carried on as far north Wisconsin in double-walled hives during the month of February out-of-doors. I would think it much safer than in a warm room; certainly so this far north.

Mr. C. T. Willis of Illinois, gives a good account of his little apiary of 7 colonies (page 73). Fifteen dollars each from a few colonies would be a nice little nest-egg for some member of a family on a farm—a boy or a girl—to tuck away for some future use. For instance, to help out school expenses. I am sorry I knew so little about the bees when a boy on the farm, and at a time when I needed just that kind of help when anxious to go away to school.

I have a little story to tell on this same line of profits from a single colony of bees. About June 1, 1908, I divided a colony by taking away the queen and about half of the brood and bees from a 9-frame hive, filling the outside spaces of each with frames of foundation. The hive of the new colony was opened immediately, and, of course, the old bees returned to the parent hive. Without going into details, I will simply say, that from the made colony I sold 4 cases of honey for $16.00, and the colony for $10.00 in the fall. It took about half hour to make the colony, and about a half day to do the rest of the work.

Evanston, Ill. Wm. M. Whitney.

That Big Honey-Yield from One Colony and Its Increase.

Some time ago I received the following letter from Mr. G. W. Vangundy, which explains itself:

"On page 23 of the American Bee Journal, I see an item stating that you doubted that I obtained 1144 pounds of honey from one colony and its increase. I obtained the honey just the same. What would you say if I should tell you of a man who obtained 1800 pounds of honey from 2 colonies of bees, without the increase? Then you would say, 'There is something wrong somewhere,' if the American Bee Journal would print it.

"In conclusion, I wish to say that the American Bee Journal has not printed anything false in regard to the 1144 pounds of honey from one colony and its increase. I sold the honey at 6 cents a pound. It was extracted honey. It was a fine quality, and if I had a sample bottle I would send you some, just to let you know that we have a better quality of honey than you have in Illinois, or any other State. This is saying a good deal, but the proof of the pudding is in the [showing] eating."

In regard to doubting the truth of Mr. Vangundy's statement, I find nothing in the item that says any such thing. I am of the opinion that he thought that last paragraph was meant for him and the American Bee Journal. It says:

"In conclusion, I wish to say that I believe the best way to get the newspapers to stop publishing falsehoods about bees, honey, and temperance, is to help them (those that want the truth) to obtain and furnish truthful reading matter for their papers."

I do not consider the American Bee Journal a newspaper, or anything near it. Mr. Vangundy says, in regard to his methods of management, "My management is to feed the bees all they can eat of liquid honey. (Do not feed sugar syrup.) Honey is their natural food. I get my bees good and strong when the honey-flow comes." The bees are allowed to swarm once or twice, and then they are fed all the liquid honey they can eat.

I thank Mr. Vangundy for his kind letter, and possibly he will tell us some more of his methods in the future. While they may not be practical for bee-keepers in Illinois, it may help some other bee-keeper in a locality similar to his.

As to his honey being of better quality than we have in Illinois or any other State, I must say that "I don't know."

Hampshire, Ill. Chas. M. Hix.

Priority Rights and Bee-Keepers.

The February number of the American Bee Journal is a fine one if it did take a little longer time. But, it did amuse me to read the "Priority Rights" item on page 38. I always thought bee-keepers fair and just, and hate to think I have been mistaken. Suppose I or some one interested in bees should move down there in California and buy land and pay for it. What right would bee-keepers who had been there before I came, to say that I had no right to put my land to the use of keeping bees? If I bought 100 or 160 acres, should any man have the right (although perhaps he did not have any land) to prohibit me from putting my land to any use I desired? If they try the scheme laid out in that priority rights scheme, I do hope, for the sake of justice, that they will be defeated grandly.

Another way that seems just to me, would be to allow a settled number of colonies to each, according to the amount of land or bee-pasturage he had. That would be more like a square deal. The right of priority is not a right at all, and I am pretty sure that a law to that effect never will be made, or at least would not hold.

I remember in the old country, the cattle pasture was in common, but you would keep only so many head, according to the acres you were the owner of. Can any one say that that was not right?

Now, fellow bee-keepers, let us try to keep up the good reputation that bee-keepers have had for fair-mindedness and justice, and show the world that we can see the right of the other man as well as our own.

Bees around here have wintered fairly well, although we have had a pretty cold winter. One day the temperature was down to 10 degrees below zero, and that is pretty cold for here.

O. K. Rice.

Grays River, Wash., Feb. 25.

Bumble-Bees—Bees Too Forward.

On page 58, Rev. Mahin and Mr. Tillinghast each discuss the bumblebee. I was glad to see it, as we know very little of the bumble-bee. In my experience I have found much of the experience of these gentlemen to be true, with the exception of the females going into the earth for the winter. I never saw, nor have I seen any one among our people that ever saw a bumble-bee in winter. We dig, we plow, we grub up bushes, all in the regular routine of farm work, and find many insects in the bosom of the earth for protection, but no bumble-bees, "yellow jackets" or "bell" hornets. The habits of the two last-named, as far as a preparation for perpetuation of species is concerned, are about the same, but we don't find them here in winter. The female wasps are plentiful. Any dead tree or an old house is, as a rule, their winter quarters. It is a curious thing about bumble-bees taking up their breeding-places in early spring.

I am a bird-lover, and put up homes for the titmouse, the bluebird, and house martin every year. The first-named bird makes her nest early, of wool and hair, in March, and by the time Mrs. Bumble-bee comes, she is quietly sitting on her eggs. Mrs. Bumble-bee generally goes in and takes possession of the cozy nest, and my beautiful little songster leaves me. Also, in my shed and out-houses where I store empty boxes, into rats' nests these bees go, and, in all probability, I don't find them until enough of those small workers are out and ready to go for me at the slightest interference.

Never can I forget my experience on the farm when breaking up a clover fallow in the

American Bee Journal

summer or early fall. These things after being turned up by the plow would sting me and the horses so that I can never love them even if I wanted to. Often we had serious accidents as a result of those bees stinging horses that would run off with the plow and man. There are not many of them here now in the fields since but little red clover is grown, so they hunt breeding-places about buildings, etc.

The weather here in Virginia has been so warm this winter that trees have budded and even a few fruit-blossoms are out. But today (Feb. 25th), we have a cold, stormy northeasterly wind, that is calculated to remind everybody that old "King Winter" isn't gone yet. Our bees are entirely too forward in their operations. My hives, all of which are double (or a combination of 2 colonies), are filled with hatched, hatching and sealed brood, and lots of eggs—just about as they should be late in April—and are consuming more than double the honey they should consume at this time of the year. We fear too early swarming, with nothing to work on. We rarely ever have to feed our bees, so generally keep a small amount of honey on hand. But this season I don't know just how we will arrange. All depends upon a late spring or an early one. L. L. BROCKWELL.

Edlow, Va., Feb. 25.

He Wants to Know, You Know.

I couldn't do without the means of getting more knowledge of bees. I have read "A B C and X Y Z of Bee Culture," and Dadant's "Langstroth," and such are good to refer to, but it's the American Bee Journal that helps one to be up-to-date, with latest methods and short cuts. Also we get all sides of a question, and have a chance to put in our own, or if we think we know something. And then, when we have to ask some "green questions," how comforting it is to see some one else asking *greener ones yet.*

I looked into my hives at least once a week last summer, and I was *ashamed* to ask Dr. Miller if disturbing them so much was harmful, supposing, *of course,* it must be. (But I couldn't help it). And now then, isn't it worth a year's subscription just accidentally to learn from Mr. Williams' article on page 53, that *Dr. Miller himself does the same thing.* I think it is worth more, and so I'm sending you my renewal and enough for Dr. Miller's "Forty Years Among the Bees," too, and still I'm away ahead.

I was amused to read about a fellow down South in Kentucky keeping one colony in the house to "see if they wouldn't rear bees in winter," when just a few days before (February 20) I peeked into one of my single-walled hives on the summer stand, and found eggs, larvæ, and sealed brood, and that away out here where blizzards are supposed to "hatch" at this time of year.

Now, I have an idea, and have studied up a scheme to carry it out. In introducing, let the queen get at the combs and *lay in the cells* before the bees get to her. The idea is that if a queen can get to lay even 100 or so eggs, the bees will be more likely to accept her. I would like to have the opinions of some authorities as to whether there is anything in this idea or not. It seems reasonable to me, but it seems as if some one must have tried it long ago, although I have never read nor heard of it.

LOUIS MACEY.

North Platte, Nebr., Feb. 27.

Wiring Frames—A Good Bee-Story.

As I am interested in bee-keeping I take pleasure in reading the American Bee Journal. I just received the February number, and it is the best of all. I have been keeping bees for a number of years, and when I read the American Bee Journal I feel a good deal like a little boy when he gets up in school to recite his first piece. I have both comb and extracted honey. I sell all at retail to friends and neighbors, and do not have enough to go around.

Last year was a poor honey season with us. One bee-keeper said it was the worst he ever experienced, and he has kept bees 28 years, and has as much as 11 or 12 tons in a season.

I agree with Mr. Greiner about wiring frames. I wire mine as tight as possible without springing them, as Mr. Greiner says a tight wire imbeds much easier than a slack one, and it certainly makes a stiffer comb to extract. I have a device of my own make for wiring frames, that allows no wasting or snarling of wire, and in the same time I can wire more frames. I wish I had the time to describe it to the dear sisters. It might help them to escape a divorce suit; but as I am a bachelor bee-keeper, maybe it would not do.

In regard to the Apiary Beautiful, I must say that I do not admire some of the pictures in the American Bee Journal. I know of an apiary of over 200 colonies that looks like a miniature city. The hives are set low on the ground, and in straight rows that lead up to the honey-house. The grass is kept cut as smooth as any lawn. When I saw them last fall they were all packed for winter, each one as trim and neat as a cottage in a suburb.

That story from Sweden Valley, Pa., reads as if there were honey on all sides of it.

It seems our sister bee-keepers take pleasure in the misfortunes of their "Dear Johns." I hope my brother bee-keepers will excuse me for telling what happened to a "John" of my acquaintance. It was something like this: A stray swarm came along, and "John" hived it in a box of some kind. A day or two after he thought he would move them to a better place, so he picked up the box and started with it. In some way his feet got tangled and down he went, box and all. When he arose, the bees arose with him, and commenced to sting for all they were worth. "John" at once started for the barn, and at the same time commenced to shed his apparel, so by the time he reached the barn he hadn't much left in the line of clothes, and what little he did have was tossed out the doors as soon as possible. He then began calling to his wife who was in the house trying to control the peals of laughter that would get the best of her in spite of all she could do. Pretty soon she heard him call, and she went out. There stood John with just his head projecting between the doors. Camly as possible she asked him what he wanted. "Go into the house and get me some clothes, and don't stand there and laugh!" he said. So she went to the house and got John a suit from head to foot. John quickly donned these and got to the house where his wife helped him dress his swollen hands and face. His wife, when telling me about it, said she believes she would have had to laugh if the bees had stung him to death.

I hope some of these days to become more of a professional bee-keeper, and then I will try to write something more worthy of the American Bee Journal.

BACHELOR BEE-KEEPER.

Good for the Caucasians.

If bee-keepers would only lay aside all prejudice and use the good common sense the Creator has given them, it would go a long way toward solving some of the most perplexing problems the young bee-keeper has to contend with. Selfishness, prejudice, and ignorance are the three prime factors which tend to keep the amateur bee-keeper at sea; as their writings are so conflicting that the beginner is at a loss to know where to draw the line. I notice in the Bee Journal, of not recent date, where a queen-breeder took up the "Big Stick" and gave the Caucasians a good dressing. Yet in the same issue he advertises Italian queens. Can a beginner draw any conclusions from such information?

On page 313 (1908) in the October number, a writer from Iowa says: "On September 10 I introduced a queen. About a week ago I opened the hive and found the entrance stopped with propolis," etc. Now let us look at this problem fairly. Could this queen have laid the eggs and reared the brood to have carried this propolis from September 10 until the "Old Reliable" went to press in October? Surely such reports are detrimental and altogether misleading. The real truth-seeker must take such reports for what they are worth. I often see where the truth-seekers ask about the Caucasians, and always get an answer from some one who, I honestly believe, has had no personal experience.

For 3 years I have in a small way tested the Caucasians side by side with the much-praised Red Clover (?) Italians. I purchased 5 Caucasian queens. I also had 3 colonies of Italians as above mentioned. But before I go farther I will say that three of the queens were just what the man from whom I bought them claimed they were—simply worthless. Only he "wrote them up" as Caucasians. If they were, they were not the kind sent out by the Agricultural Department at Washington, D. C. They were large workers with distinct yellow bands. The drones were larger than the Italians, with yellow markings also. I will not class them in my report, for they stored no surplus worth mentioning. The other two queens increased to 5 colonies, which produced 434 pounds of comb honey, or an average of nearly 88½ pounds each, or an average, taking spring count, of 217 pounds each. The 3 Italians increased to 8 colonies, and produced 228 pounds of comb honey, or an average of 28½ pounds, or an average, spring count, of 76 pounds. I take the above from my tabulated account, and it is no guesswork.

I requeened 6 of the Italian colonies with Caucasian queens. All the Caucasians are on the summer stands with plenty of stores gathered by themselves. The two remaining Italian colonies are in the cellar with a good supply of sugar syrup. Those who are actually seeking information concerning this new race of very gentle bees can draw their conclusions from what I say, or possibly use their own good judgment regardless of what any one may say pro or con. As for me, I would rather pay $5 for a good gray Caucasian queen than accept a "Clover" queen as a gift. Why? Look at my report and "figger" up at 16 2-3 cents per pound.

J. W. BLAKELY.

Morrow Co., Ohio, March 1.

No Spring Flight Yet.

It is cold here all the time now, so bees have had no spring flight yet.

Borodino, N. Y. G. M. DOOLITTLE.

Bees in Strong Condition.

Bees are still in promising condition, very strong, with a fair amount of brood, and no signs of spring-dwindling so far.

G. C. GREINER.

La Salle, N. Y., April 5.

Wintered Pretty Well.

Bees have wintered pretty well, but I will have to feed as some will be short of stores. The weather is cold and windy every day.

D. H. GATHMANN.

Forest City, Ill., April 3.

Excellent Prospects for Bees.

Bees are in demand, owing to the excellent prospect of an abundant yield of honey. In the valleys where willows, eucalyptus, and pepper are plentiful, bees have been gathering honey all winter. We have had 19 inches of rain, and more is now falling.

W. B. THORNE.

Burbank, Calif., March 30.

Some Heavy Winter Losses of Bees.

Winter losses in this vicinity are very heavy in the valley of the Platte River, from Denver to 30 miles down stream. Outside of this territory the losses are not much more than ordinarily, although we have had one of the longest winters on record.

FRANK RAUCHFUSS.

Denver, Colo., March 31.

Bees Wintered Well.

March was mostly a cold, wet month. Today it is rainy with some snow, as was also yesterday. Bees have wintered unusually well. I think I have 2 queenless colonies, but I am expecting 2 queens today or tomorrow. I was quite successful with the Abbott or "lazy man's" plan of introducing queens last fall.

Leon, Iowa, April 2. EDWIN BEVINS.

An Evergreen Windbreak.

The Gardner Nursery Company, Osage Iowa, have been growing Hardy "Blizzard Belt" Evergreens for the past 40 years and have found from experience that they are as easily grown as the most common forest trees.

The cheapest and best way to get a successful Evergreen windbreak is to purchase from 500 to 1000 Hardy "Blizzard Belt" Evergreens ¼ to ½ foot tall and plant them out, at proper time in the spring, in a well prepared bed in your garden, and let them stay there two years, before planting into permanent windbreak quarters. Set the trees in a row across the bed 3 inches apart in row and rows 6 inches. A bed 4 feet wide and 16 feet long holds 500 trees.

In the beginning plan on setting more of

the evergreens in bed than you will want for windbreak as the extra trees will come handy for setting in your lawn, along the street, or for making a fancy hedge or screen. Then if you still have some left you can easily get your original money back by selling your surplus to some of your neighbors who were not so beforehanded in their planning. No need of paying from $30 to $150 for an Evergreen Windbreak. Write today to THE GARDNER NURSERY COMPANY, Osage, Iowa, for their catalog and their EVERGREEN WINDBREAK offer in which they give you "A TREE FREE WITH EVERY ONE YOU BUY." They prepay express charges and guarantee safe arrival to your express office; also agree to replace any of the trees that might fail to grow, at one-half price, thus standing one-half of any possible loss and you the other half, which is a fair and reasonable basis. Mention the American Bee Journal when writing.

Gospel of Good Seed Corn.

The first seed dealers, we believe, to make a specialty of seed corn were the Iowa Seed Company, of Des Moines, Iowa. In 1881 they introduced the Profit Corn which originated on their seed farms in Madison County, and it was claimed at that time that it would produce more bushels of shelled corn per acre than any other corn in existence, and it held its reputation until they introduced the Iowa Silver Mine, which was sent out fourteen years later, in 1895. The last variety has proven throughout the country to be the most productive of any variety of corn ever brought out, owing to its pure-bred character, it is adapted to a wider range of climate and soils than any other sort.

They also introduced the Iowa Gold Mine, Star Lenocher's Homestead and Golden West, Early Longfellow Dent and Farmers Reliance which have all become standard sorts, the last two being extra early kinds, which will mature in about 90 days. The last variety which they introduced was the Prosperity Corn, a large solid-eared, yellow variety, and some prominent corn growers say that in this variety the climax has been reached, it being as near perfection as has ever been attained or as is apt to be attained for some years to come. While there may possibly be some varieties which will beat it in a show room at corn ex-

positions, still as a practical, everyday profitable corn it will hold its own and come out ahead in the number of bushels to the acre.

The 9 varieties of corn introduced by this firm are all illustrated in colors in their catalog. The Iowa Seed Co., will send a free sample of their 3 leading varieties—the Prosperity, Iowa Silver Mine, and Farmers' Reliance—together with a copy of their large illustrated catalog to any of our readers who request it. Better write them today; a postal card request is sufficient. Be sure to mention the American Bee Journal when writing to them.

Raspberries 25c to 35c a Quart.

It pays to be particular as to the varieties you plant, especially raspberries. It is just as easy to grow the profitable kind as it is the ordinary ones. The King Red Raspberry is acknowledged by all to be the best commercial red berry grown. It is making growers more money than any other kind. The fruit is the earliest of any of the red kinds, and firm enough to carry to any market! It is hardy, prolific, fine quality and splendid for the home garden also. Experiment stations highly recommend it. A good stock of plants is being offered at very reasonable prices by W. N. Scarff, New Castle, O. Catalog free. Mention the American Bee Journal when writing.

New Style Turnouts.

The new Buggy Style Book of the Ohio Carriage Mfg. Co., is fresh from the hands of the printers. It illustrates the many new and unusually stylish rigs, which Pres. H. C. Phelps is offering this year to his "factory-to-home" patrons. Among the 125 styles of Split Hickory Vehicles there are many new and effective ideas, as well as the best development of approved standard styles. The Ohio Carriage Mfg. Company sells direct to the purchaser, cutting out jobber, wholesaler and retail dealer. It makes a special and liberal offer of 30 Days Free Road Test with the privilege of returning the buggy in case of dissatisfaction on any point. Their Split Hickory Vehicles are guaranteed for two year's time.

Our readers who are interested in any way in buggies should certainly send for this handsome and complete new catalog, free. Address, H. C. Phelps, Pres., Ohio Carriage Mfg. Co., Station 322, Columbus, Ohio.

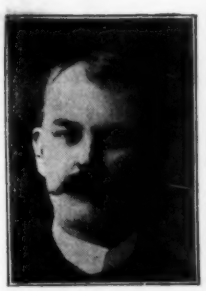
Raising Big Crops of Strawberries.

If the farmers in this country only knew how profitable a crop of strawberries are as compared to other crops and farm pursuits, I am sure more of them would be big growers of this luscious fruit. Another thing, if they knew the difference in the amount of work, they would be even more interested, because strawberries do not require the work that many other things do, and which pay less profit.

I would as soon have the proceeds from an acre of strawberries, cared for as I know how to care for them, as the proceeds from ten good cows. You don't have to tend strawberries in the winter—they care for themselves, but you do have to tend and milk the cows. It don't cost much for strawberry plants, but cows come high just now. There is no crop that is quite as profitable, all things considered and then, too, think of the delight in having for your own use such delicious fruit in abundance.

Any good soil that will grow either corn or potatoes will grow strawberries. I advise planting after two or three crops of corn have been planted on the same land. It should be drained thoroughly, as undrained land is undesirable and wet induces fungus growth—the worst enemy of the strawberry. The growing of corn and potatoes, as above mentioned, also tends to eradicate grubs—the worst insect enemy.

Apply barn manure to the corn or potato crops, thus getting the soil thoroughly incorporated with humus before setting the plants. I prefer spring planting at the time other crops are put in the ground. Set in rows, three to five feet apart, and plants one to two feet apart. See that the roots are set down straight and as deep as they were for-



merly. Keep ground clear of weeds until growth stops in the fall.

In fertilizers I recommend only concentrated or commercial fertilizers and from 500 to 2000 pounds per acre, depending on the richness of the soil. Put on 1-3 before planting, 1-3 while growing first year, and last 1-3 in following spring before fruiting.

The yields of strawberry fields are often immense—the profits, too. I have heard of people getting 25,000 quarts from an acre. I have grown the "Parker Earle" and the "Crescent" at the rate of 15,000 quarts. Growers in my country think nothing of getting $500 to $1000 worth to the acre. I know of men who were flat financially a few years ago, who today are well-to-do—mortgages paid off and have money in the bank. They did it on strawberries.

I have published a book telling about it, and will be glad to send you a copy free if you'll mention this paper. L. J. FARMER.

Box 240, Pulaski, N. Y.

SURE, the rich have the same sorrows as I have, an' not as manny throubles, p'raps, to take the sting out to their sorrows. I'd be weepin' in me apron half th' day, thinkin' about me age, if I didn't have to be thinkin' to th' rent.

—Mr. Dooley.

American Bee Journal

SPECIAL CLUBBING AND PREMIUM OFFERS

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AMERICAN BEE JOURNAL

Sample copies free to help you interest your friends and get subscriptions. If you will send us names of your neighbors or friends we will mail them sample copies free. After they have received their copies, with a little talk, you can get some to subscribe and so either get your own subscription free or receive some of the useful premiums below. They're worth getting. We **give you a year's subscription free** for sending us **two new** subscriptions at 75 cents each.

BEE-KEEPERS' NOVELTY POCKET-KNIFE

Your name and address put on one side of the handle as shown in cut, and on the other side pictures of a queen-bee, a worker, and a drone. The handle is celluloid and transparent, through which is seen your name. If you lose this knife it can be returned to you, or serves to identify you if you happen to be injured fatally, or are unconscious. Cut is exact size. Be sure to write exact name and address. Knife delivered in two weeks. Price of knife alone, postpaid, $1.25, With year's subscription, $1.75. **Free** for 4 new 75c subscriptions.

BEE-KEEPERS' GOLD-NIB FOUNTAIN PEN

A really good pen. As far as true usefulness goes is equal to any any of the higher-priced, much-advertised pens. If you pay more it's **name** you're charged for. The Gold Nib is guaranteed 14 Karat gold, Iridium pointed. The holder is hard rubber, handsomely finished. The cover fits snugly, and can't slip off because it slightly wedges over the barrel at either end. This pen is non-leakable. It is very easily cleaned, the pen-point and feeder being quickly removed. The simple feeder gives a uniform supply of ink to the pen point without dropping, blotting or spotting. Every bee-keeper ought to carry one in his vest-pocket. Comes in box with directions and filler. Each pen guaranteed. Here shown two-thirds actual size.

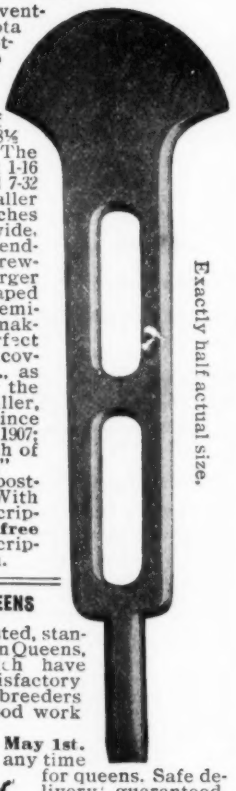
Price alone, postpaid, $1.25. With a year's subscription, $1.75. **Given free** for 4 new subscriptions at 75 cents each.

MONETTE QUEEN-CLIPPING DEVICE

The Monette Queen-Clipping Device is a fine thing for use in catching and clipping Queens' wings. Four and one-half inches high. It is used by many bee-keepers. Full printed directions sent with each one.

Price alone, postpaid, 25 cents. With a year's subscription, 90 cents. **Given free** for sending one new subscription at 75 cents.

IDEAL HIVE-TOOL



Exactly half actual size.

A special tool invented by a Minnesota bee-keeper, adapted for prying up supers and for general work around the apiary. Made of malleable iron, 8½ inches long. The middle part is 1 1-16 inches wide and 7-32 thick. The smaller end is 1⅛ inches long, ¼ inch wide, and 7-32 thick, ending like a screw-driver. The larger end is wedge-shaped having a sharp, semi-circular edge, making it almost perfect for prying up covers, supers, etc., as it does not mar the wood. Dr. Miller, who has used it since 1903 says, Jan. 7, 1907: "I think as much of the tool as ever."

Price alone, postpaid, 40 cents. With a year's subscription, $1.00. **Given free** for 2 new subscriptions at 75c each.

PREMIUM QUEENS

These are untested, standard-bred Italian Queens, reports of which have been highly satisfactory They are active breeders and produce good workers.

Sent only after May 1st. Orders booked any time for queens. Safe delivery, guaranteed. Price, 75 cents each, 6 for $4.00, or 12 for $7.50. One queen with a year's subscription, $1.20. Queen **free** for 3 new 75c subscriptions.

HUMOROUS BEE POST-CARDS

A "Teddy Bear" on good terms with everybody, including the bees swarming out of the old-fashioned "skep." Size 3½x5½, printed in four colors. Blank space 1½x3 inches for writing. Prices -3 postpaid, 10 cents; 10 for 25 cents. Ten with a year's subscription, 90 cents. Six **given free** for **one new** 75c subscription.

BOOKS FOR BEE-KEEPERS

Forty Years Among the Bees, by Dr. C. C. Miller.—334 pages, bound in handsome cloth, with gold letters and design, illustrated with 112 beautiful half-tone pictures, taken by Dr. Miller. It is a good, new story of successful bee-keeping by one of the masters, and shows in minutest detail just how Dr. Miller does things with bees. Price alone, $1.00. With a year's subscription, $1.50. **Given free** for 3 new subscriptions at 75 cents each.

Advanced Bee-Culture, by W. Z. Hutchinson.—The author is a practical and helpful writer. 330 pages; bound in cloth, beautifully illustrated. Price alone, $1.20. With a year's subscription, $1.70. **Given free** for 4 new subscriptions at 75 cents each.

A B C & X Y Z of Bee Culture, by A. I. & E. R. Root.—Over 500 pages describing everything pertaining to the care of honey-bees. 400 engravings. Bound in cloth, price alone, $1.50. With a year's subscription, $2.00. **Given free** for 6 new subscriptions at 75 cents each.

Scientific Queen-Rearing, as Practically Applied, by G. M. Doolittle.—How the very best queens are reared. Bound in cloth and illustrated. Price alone, $1.00. With a year's subscription, $1.50. **Given free** for 4 new subscriptions at 75 cents each. In leatherette binding, price alone, 75 cents. With a year's subscription, $1.25. **Given free** for 2 new subscriptions at 75 cents each.

Bee-Keeper's Guide, or Manual of the Apiary, by Prof. A. J. Cook.—This book is instructive, helpful, interesting, thoroughly practical and scientific. It also contains anatomy and physiology of bees. 544 pages, 295 illustrations. Bound in cloth. Price alone, $1.20. With a year's subscription, $1.70. **Given free** for 4 new subscriptions at 75 cents each.

Langstroth on the Honey-Bee, revised by Dadant.—This classic has been entirely rewritten. Fully illustrated. No apiarian library is complete without this standard work by "The Father of American Bee-Culture." 520 pages, bound in cloth. Price alone, $1.20. With a year's subscription, $1.70. **Given free** for 4 new subscriptions at 75 cents each.

"The Honey-Money Stories."—A 64-page booklet containing many short, bright stories interspersed with facts and interesting items about honey. The manufactured comb-honey misrepresentation is contradicted in two items, each occupying a full page. Has 33 fine illustrations of apiaries or apiarian scenes. It also cantains 3 bee-songs. This booklet should be placed in the hands of everybody not familiar with the food-value of honey, for its main object is to interest people in honey as a daily table article. Price 25 cents. With a year's subscription, 90 cents. **Given free** for one new subscription at 75c.

Three copies for 50 cents; or the 3 with a year's subscription, $1.00; or the 3 copies **given free** for 2 new subscriptions at 75 cents each.

Amerikanische Bienenzucht, by Hans Buschbauer, is a bee-keepers' handbook of 138 pages, which is just what our German friends will want. It is fully illustrated and neatly bound in cloth. Price alone, $1.00. With a year's subscription, $1.50. **Given free** for 3 new subscriptions at 75 cents each.

THE EMERSON BINDER

A stiff board outside like a book-cover with cloth back. Will hold easily 3 volumes (36 numbers) of the American Bee Journal. Makes reference easy, preserves copies from loss, dust and mutilation. Price postpaid, 75 cents. With a year's subscription, $1.25. **Given free** for 3 new subscriptions at 75 cents each.

WOOD BINDER

Holds 3 volumes. Has wood back but no covers. Price, postpaid, 20 cents. With a year's subscription 80 cents. **Given free** for one new subscription at 75 cents.

BEE-HIVE CLOCK

A few of these handsome "bronze-metal" clocks left. Base 10½ inches wide by 9⅜ inches high. Design is a straw skep with clock face in middle. Keeps excellent time, durable and reliable. Weight, boxed, 4 pounds. You pay express charges. Price $1.50. With a year's subscription, $2.00. **Given free** for 6 new subscriptions at 75 cents each.

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Honey and Beeswax

CHICAGO, March 29.—The demand for honey during the past month has not been equal to the offerings, which are at present in excess of any previous year at this time. The consumption has not equaled our expectations in view of the quality, which has seldom been equaled. The prices are without change from the last issue, but are weak. Beeswax is strong at 30c.

R. A. BURNETT & Co.

BOSTON, April 1.—We quote: Fancy white comb honey, 15c; No. 1, 14c; white extracted, 8 1-2c; light amber, 7 1-2c. Beeswax, 30c.

BLAKE, LEE CO.

LOS ANGELES, April 6.—Water-white extracted, 8c; white, 7 1-2c; light amber, 7c; amber, 5c. Fancy white comb, 16c; No. 1 white, 15c; fancy light amber, 14c; No. 1 light amber, 12 1-2c.

H. J. MERCER.

CINCINNATI, March 29.—The market on comb honey here is bare of fancy comb honey. There is considerable off-grade honey on the market, but no demand. Extracted honey fair; white sage at 9c in 60-lb. cans; amber in barrels at 6 and 6 1-2c. Beeswax is moving fair at $33 per 100 lbs.

C. H. W. WEBER.

TOLEDO, March 30.—The market on comb honey remains about the same as last quotations. Stocks are not moving very rapidly, and owing to some producers who have held their honey since last fall, and pushing it on the market has a tendency to break the prices. Fancy comb, 14 1-2 to 15c; No. 1, 14 to 14 1-2c. Extracted white clover is in fair demand at at 7 to 7 1-2c in cans; alfalfa, 6 to 6 1-2c; amber honey, 6 to 6 1-2c. Beeswax, 26 to 28c.

THE GRIGGS BROS. & NICHOLS CO.

INDIANAPOLIS, March 27.—There is a favorable demand for best grades of both comb and extracted honey. Stock held by jobbing houses is rapidly decreasing, and very little is now being offered by producers. I note some arrivals of fancy white comb at 12 1-2c, and No. 1 at 12c; white clover extracted in 5-gallon cans at 7c. Some amber honey is being offered, but the demand does not justify and established price. Beeswax is steady at 29c cash, or 31c in exchange for goods.

WALTER S. POUDER.

KANSAS CITY, MO., April 5.—We have nothing new to report on the condition of the honey market, except that we are having a little better demand for both comb and extracted. We quote: No. 1 white comb, 24 sections, $2.65 per case; No. 2 white and amber, $2.25 to $2.40. Extracted, white, per lb., 7 to 7 1-2c; amber, 6 to 6 1-2c. Beeswax, 25 to 28c.

C. C. CLEMONS PROD. CO.

ZANESVILLE, OHIO, March 30.—There is some demand for honey though the market is still rather inactive. Best white clover comb honey would bring on arrival 13 to 14c, and sells in a wholesale way at 15 to 16 1-2c. Best extracted wholesales at 9 1-2c. For beeswax I offer 30c in cash or 32c in exchange for bee-supplies.

EDMUND W. PEIRCE.

NEW YORK, March 29.—There are no new features whatsoever in regard to comb honey. Some little demand for fancy white stock, but no demand for off grades. As said before, we cannot encourage shipments at this time. Prices are regular. Extracted honey in fairly good demand with sufficient supply. We quote: California white, 8 1-2 to 9c; light amber, 7 1-2c to 8c; amber, 6 1-2 to 7c. Southern and West India, in barrels, 60 to 70c a gallon, according to quality. Beeswax steady at from 29 to 30c.

HILDRETH & SEGELKEN.

DENVER, March 31.—We quote our local market as follows: No. 1 white comb honey, strictly fancy stock, per case of 24 sections, $3.25; No. 1 light amber, $3.00 per case; No. 2, $2.75 per case. Partly granulated comb honey sells from $2.40 per case down, according to its condition. Extracted, white, 8½ to 9c per lb.; light amber, 7 1-2 to 8c; strained amber, 6 1-2 to 7c. Our market is overstocked, and in all probability some honey will be carried over. We pay 25c per pound for average yellow beeswax, delivered here.

THE COLO. HONEY PRODUCERS' ASS'N.